

012-1103464-16-101891

American Sociological Review

16

A Study of <i>The Behavior of Law</i> Michael R. Gottfredson and Michael J. Hindelang	3
Comment: Common Sense in the Sociology of Law Donald Black	18
Response: Theory and Research in the Sociology of Law Michael R. Gottfredson and Michael J. Hindelang	27
Class as Conceived by Marx and Dahrendorf Robert V. Robinson and Jonathan Kelley	38
Overcrowding in the Home Walter R. Gove, Michael Hughes, and Omar R. Galle	59
Toward a Class-Dialectical Model of Power J. Allen Whitt	81
Paradigms in Evolutionary Theory Jill S. Quadagno	100
Size and Administrative Intensity in Nations Patrick D. Nolan	110
Possible Causes of the Apparent Sex Differences in Physical Health Walter Gove and Michael Hughes	126
Decision Making and Non-Decision Making in Cities Richard A. Smith	147
Comments Gail Landsman, Steven Stack, Walter L. Goldfrank, John W. Heeren, and Christopher B. Norton	162

Notice to Contributors

A processing fee of \$10 is required for each paper submitted, including comments; such fees will be waived for student members of ASA. A check or money order, made payable to the American Sociological Association, should accompany each submission. The fee must be paid in order for the review process to begin.

The maximum length of an *ASR* paper is typically ten (10) printed pages or thirty (30) typed manuscript pages including space for tables, figures and references. Due to space limitations, we must request contributors to conform to this norm as closely as possible.

To permit anonymity in the review of manuscripts, keep identifying material out of the manuscript. Attach a cover page giving authorship, institutional affiliation and acknowledgments, and provide only the title as identification on the manuscript and abstract.

ASA Multiple Submissions Policy: Submission of a manuscript to a professional journal clearly implies commitment to publish in that journal. The competition for journal space requires a great deal of time and effort on the part of editorial readers whose main compensation for this service is the opportunity to read papers prior to publication and the gratification associated with discharge of professional obligation. For these reasons, *the American Sociological Association regards submission of a manuscript to a professional journal while that paper is under review by another journal as unacceptable.*

SUBMISSION AND PREPARATION OF MANUSCRIPTS

1. Submit four (4) copies and retain the original for your files. Copies may be Xerox, mimeograph or multilith, but not carbons.
2. Enclose a stamped self-addressed postcard for acknowledgment of manuscript receipt. *Manuscripts will not be returned.* Please do not send your original copy.
3. All copy must be typed, doublespaced (including indented material, footnotes and references) on 8½ by 11 inch white opaque paper. Lines must not exceed six (6) inches. Margins must be a minimum of one inch.
4. Include four (4) copies of an abstract of no more than 150 words.
5. Type each table on a separate page. Insert a location note at the appropriate place in the text, e.g., "Table 2 about here." Send copies, retain originals.
6. Figures must be drawn in India ink on white paper. Send copies, retain originals.
7. Clarify all symbols with notes in the margins of the manuscript. Circle these and all other explanatory notes not intended for printing.
8. Footnotes should not be placed in the body of the text. Type them (doublespaced) and attach them as a separate appendix to the text. Number them consecutively throughout the text. Footnotes are to be kept to a minimum and used only for substantive observations. Source citations are made within the text rather than in footnotes.
9. Acknowledgments, credits and grant numbers are placed on the title page with an asterisk.

REFERENCE FORMAT

A. *In the text:* All source references are to be identified at the appropriate point in the text by the last name of the author, year of publication and pagination where needed. Identify subsequent citations of the same source in the same way as the first, not using "*ibid.*," "*op.cit.*," or "*loc. cit.*" Examples follow:

1. If author's name is in the text, follow it with year in parentheses. ["... Duncan (1959) ..."]
2. If author's name is not in the text, insert, in parentheses, the last name and year, separated by a comma. ["... (cf. Gouldner, 1963) ..."]
3. Pagination (without "p." or "pp.") follows year of publication after a colon. ["... Kuhn (1970:71)."]
4. Give both last names for dual authors; for more than two use "et al." in the text. When two authors have the same last name, use identifying initials in the text. For institutional authorship, supply minimum identification from the beginning of the complete citation. ["... (U.S. Bureau of the Census, 1963:117) ..."]
5. Separate a series of references with semicolons and enclose them within a single pair of parentheses. ["... (Burgess, 1968; Marwell et al., 1971; Cohen, 1962) ..."]

B. *In the appendix:* List all source citations by author, and within author by year of publication, in an appendix titled "References." The reference appendix must be complete and include all references in the text. The use of "et al." is not acceptable in the appendix; list the names of all authors. (See A. 4. for text format.)

If there is more than one reference to the same author and year, distinguish them by the letters, a, b, etc. added to the year. ["... Levy (1965a:331) ..."] Give the publisher's name in as brief a form as is fully intelligible. For example, John A. Wiley and Sons should be "Wiley." If the cited material is unpublished, use "forthcoming" with name of journal or publisher; otherwise use "unpublished."

Use no underlining, italics or abbreviations.

Examples follow:

1. **Books:** Jud, Gerald J., Edgar W. Mills, Jr. and Genevieve Walters Burch
1970 *Ex-Pastors*. Philadelphia: Pilgrim Press.
U.S. Bureau of the Census
1960 *Characteristics of Population*. Volume 1. Washington, D.C.: U.S. Government Printing Office.
Bernard, Claude
[1865] *An Introduction to the Study of Experimental Medicine*. Tr. Henry Copley Greene. New York: Dover.
1957
2. **Periodicals:** Conger, Rand
Forth- "The effects of positive feedback on direction and amount of verbal-
coming zation in a social setting." *Pacific Sociological Review*.
Merton, Robert K.
1963a "The ambivalence of scientists." *Bulletin of The Johns Hopkins Hospital* 112:77-97.
1963b "Resistance to the systematic study of multiple discoveries in science." *European Journal of Sociology* 4:237-82.
3. **Collections:** Davie, M.
1938 "The pattern of urban growth." Pp. 133-61 in G. Murdock (ed.), *Studies in the Science of Society*. New Haven: Yale University Press.

See recent issues for further examples.

Revised 1978 ASR

AMERICAN SOCIOLOGICAL REVIEW

Official Journal of the American Sociological Association

FEBRUARY, 1979

VOLUME 44, NUMBER 1

ARTICLES

A Study of <i>The Behavior of Law</i>	Michael J. Hindelang	3
Comment: Common Sense in the Sociology of Law	Donald Black	18
Response: Theory and Research in the Sociology of Law	Michael R. Gottfredson and Michael J. Hindelang	27
Class As Conceived by Marx and Dahrendorf: Effects on Income Inequality, Class Consciousness, and Class Conflict in the United States and Great Britain	Robert V. Robinson and Jonathan Kelley	38
Overcrowding in the Home: An Empirical Investigation of Its Possible Consequences	Walter R. Gove, Michael Hughes, and Omer R. Galle	59
Toward a Class-Dialectical Model of Power: An Empirical Assessment of Three Competing Models of Political Power	J. Allen Whitt	81
Paradigms in Evolutionary Theory: The Sociobiological Model of Natural Selection	Jill S. Quadagno	100
Size and Administrative Intensity in Nations	Patrick D. Nolan	110
Possible Causes of the Apparent Sex Differences in Physical Health: An Empirical Investigation	Walter Gove and Michael Hughes	126
Decision Making and Non-Decision Making in Cities: Some Implications for Community Structural Research	Richard A. Smith	147

COMMENTS AND REPLIES

Comment on Carroll, ASR June, 1975		
The Ghost Dance and the Policy of Land Allotment	Gail Landsman	162
Rejoinder to Landsman	Michael P. Carroll	166
Comment on Hewitt, ASR June, 1977		
The Effects of Political Participation and Socialist Party Strength on the Degree of Income Inequality	Steven Stack	168
Reply to Stack	Christopher Hewitt	171
Comment on Appelbaum, ASR February, 1978		
Dialectical Analysis and Closed Systems: Class Societies or World-Economy?	Walter R. Goldfrank	172
Reply to Goldfrank	Richard P. Appelbaum	174
Comment on Alexander, ASR June, 1975		
Parsons's Voluntarism	John W. Heeren	174
Once Again: The Case for Parsons's Voluntarism; Reply to Heeren ..	Jeffrey C. Alexander	175
Comment on Long, ASR February, 1974		
1970 Census Figures on Public Assistance Income: Some Comparative Figures from Alternate Sources	Christopher B. Norton	177
Reply to Norton	Larry H. Long	178
Reply to Lincoln and Olson, ASR February, 1978		
The "Ecological Approach" and Community Leadership		
..... Charles M. Bonjean, Michael D. Grimes, Robert L. Lineberry, and J. Larry Lyon		181

Editor: RITA J. SIMON

Deputy Editors: CLARK MCPHAIL AND ROSS M. STOLZENBERG

Associate Editors: MICHAEL T. AIKEN, ROBERT EVAN COLE, BEVERLY DUNCAN, BERNARD FARBER, DANIEL GLASER, MICHAEL HINDELANG, GISELA J. HINKLE, ROSABETH KANTER, JAMES R. KLUEGEL, BARBARA LASLETT, JOHN LOFLAND, MURRAY MELBIN, ANTHONY OBERSCHALL, VALERIE K. OPPENHEIMER, SAMUEL PRESTON, ALEJANDRO PORTES, BARBARA RESKIN, RICHARD RUBINSON, BARBARA SOBIESZEK, DAVID SNYDER, JOHN WILSON, MAYER ZALD

Copy Editor: MARY S. MANDER

Managing Editor: LINNA MCDADE

Editorial Assistant: CLYDENE MORGAN

Executive Officer: RUSSELL R. DYNES



SCOPE AND MISSION OF AMERICAN SOCIOLOGICAL REVIEW: The *American Sociological Review* publishes work of interest to the discipline in general, new theoretical developments, results of research that advances our understanding of the most fundamental social processes, and important methodological innovations. Like other publications of the Association, emphasis is given to exceptional quality. Unlike the more specialized journals of the Association, the *American Sociological Review's* primary focus is on what-ever has the most general bearing on the knowledge of society.

Concerning manuscripts, address: Editor, *American Sociological Review*, Department of Sociology, University of Illinois, Urbana, Illinois 61801. (217) 333-6515.

The *American Sociological Review* (ISSN 0003-1224) is published at 49 Sheridan Avenue, Albany, New York, bimonthly in February, April, June, August, October, and December.

Applications for permission to quote from this journal should be addressed to the Executive Office.

Copyright © 1979 American Sociological Association.

Annual membership dues of the Association: Member and International Member, \$30-50; Student Member, \$15; Associate, \$20; Student Associate, \$10; International Associate, \$12.

Application for membership and payment of dues should be made to the Executive Office. Subscription rate for members, \$10; nonmembers, \$15; institutions and libraries, \$30; nonmember students, \$10. Single issue, \$4.

New subscriptions and renewals will be entered on a calendar year basis only.

Change of address: Six weeks advance notice to the Executive Office and old address as well as new are necessary for change of subscriber's address.

Concerning advertising, changes of address, and subscriptions, address: Executive Office, American Sociological Association, 1722 N Street, N.W., Washington, D.C. 20036.

Claims for undelivered copies must be made within the month following the regular month of publication. The publishers will supply the missing copies when losses have been sustained in transit and when the reserve stock will permit.

Second class postage paid at Washington, D.C. and additional mailing offices.

Members of the Council

Officers of the Association for the year 1979

HUBERT BLALOCK, *President*

University of Washington

CHARLES Y. GLOCK, *Vice President*

University of California, Berkeley

PETER ROSSI, *President-Elect*

University of Massachusetts, Amherst

HELEN HUGES, *Vice-President Elect*

Cambridge, Massachusetts

JAMES F., SHORT, JR., *Secretary*

Washington State University

RUSSELL R. DYNES, *Executive Officer*

Ohio State University

AMOS H. HAWLEY, *Past President*

North Carolina, Chapel Hill

Elected-at Large

ELISE BOULDING

University of Colorado

ERNEST Q. CAMPBELL

Vanderbilt University

HERBERT L. COSTNER

National Science Foundation

IRWIN DEUTSCHER

University of Akron

WILLIAM A. GAMSON

University of Michigan

RICHARD J. HILL

University of Oregon

HELENA LOPATA

Loyola University, Chicago

PAULINE BART

University of Illinois, Chicago

JOAN MOORE

University of Wisconsin

MORRIS ROSENBERG

University of Maryland

IMMANUEL WALLERSTEIN

SUNY, Binghamton

MAURICE ZEITLIN

University of Cal., Los Angeles

University of Wisconsin

(Articles in the REVIEW are indexed in the Social Sciences Index, Public Affairs Information Service, Psychological Abstracts, Sociological Abstracts, Ayer's Guide, University Microfilms, Abstracts for Social Workers, International Political Science Abstracts, and United States Political Science Documents.)

New Policy

- Starting as soon as possible, the ASR will introduce a Research Notes and Reports Section. We will be interested in receiving manuscripts that fit those qualifications.
- On the regular articles, we are loosening our page limitations somewhat, and would be happy to review manuscripts that are up to fifty manuscript pages.

ITEMS

- MICHAEL R. GOTTFREDSON (A Study of the Behavior of Law; Response: Theory and Research in

the Sociology of Law) is Director of the Criminal Justice Research Center, Albany, and Visiting Assistant Professor in the School of Criminal Justice, State University of New York at Albany. His re-

(Continued on page 183)

AMERICAN SOCIOLOGICAL REVIEW

Official Journal of the American Sociological Association

APRIL, 1979

VOLUME 44, NUMBER 2

ARTICLES

- The Founding of the *American Sociological Review*: The Anatomy of a Rebellion Patricia Madoo Lengermann 185
- Structural Determinants of Urbanization in Asia and Latin America, 1950-1970 Glenn Firebaugh 199
- Values, Distributive Justice and Social Change Irving Tallman and Marilyn Ihinger-Tallman 216
- Sex and Authority in the Workplace: The Causes of Sexual Inequality Wendy C. Wolf and Neil D. Fligstein 235
- The Antecedents of Community: The Economic and Institutional Structure of Urban Neighborhoods William L. Yancey and Eugene P. Ericksen 253
- Race, Regional Labor Markets and Earnings Toby L. Parcel 262
- Poverty and Infant Mortality in the United States Steven L. Gortmaker 280
- Attitude and Behavior: A Specification of the Contingent Consistency Hypothesis Kenneth H. Andrews and Denise B. Kandel 298
- Government Policy and Local Practice Paul Attewell and Dean R. Gerstein 311

COMMENTS AND REPLIES

- Comment on Robinson and Bell, ASR April 1978
"Equality, Success, and Social Justice in England and the United States": A Commentary and Critique Alan C. Kerckhoff and Robert Nash Parker 328
- Confusion and Error in Kerckhoff and Parker: A Reply Robert V. Robinson and Wendell Bell 334
- Comment on Bonacich, ASR February, 1976
Another Look at the Black/White Trend in Unemployment Rates Kay Oehler 339
- Still Another Look at Black/White Unemployment: Reply to Oehler Edna Bonacich 342

Editor: RITA J. SIMON

Deputy Editors: CLARK McPHAIL AND ROSS M. STOLZENBERG

Associate Editors: MICHAEL T. AIKEN, ROBERT EVAN COLE, BEVERLY DUNCAN, BERNARD FARBER, DANIEL GLASER, MICHAEL HINDELANG, GISELA J. HINKLE, ROSABETH KANTER, JAMES R. KLUEGEL, BARBARA LASLETT, JOHN LOFLAND, MURRAY MELBIN, ANTHONY OBERSCHALL, VALERIE K. OPPENHEIMER, SAMUEL PRESTON, ALEJANDRO PORTES, BARBARA RESKIN, RICHARD RUBINSON, BARBARA SOBIESZEK, DAVID SNYDER, JOHN WILSON, MAYER ZALD

Copy Editor: MARY S. MANDER

Managing Editor: LINNA McDADE

Editorial Assistant: HELEN CURLEY

Executive Officer: RUSSELL R. DYNES

SCOPE AND MISSION OF AMERICAN SOCIOLOGICAL REVIEW: The *American Sociological Review* publishes work of interest to the discipline in general, new theoretical developments, results of research that advances our understanding of the most fundamental social processes, and important methodological innovations. Like other publications of the Association, emphasis is given to exceptional quality. Unlike the more specialized journals of the Association, the *American Sociological Review's* primary focus is on whatever has the most general bearing on the knowledge of society.

Concerning manuscripts, address: Editor, *American Sociological Review*, Department of Sociology, University of Illinois, Urbana, Illinois 61801. (217) 333-6515.

The *American Sociological Review* (ISSN 0003-1224) is published at 49 Sheridan Avenue, Albany, New York, bimonthly in February, April, June, August, October, and December.

Applications for permission to quote from this journal should be addressed to the Executive Office.

Copyright © 1979 American Sociological Association.



Annual membership dues of the Association: Member and International Member, \$30-50; Student Member, \$15; Associate, \$20; Student Associate, \$10; International Associate, \$12.

Application for membership and payment of dues should be made to the Executive Office. Subscription rate for members, \$10; nonmembers, \$15; institutions and libraries, \$30; nonmember students, \$10. Single issue, \$4.

New subscriptions and renewals will be entered on a calendar year basis only.

Change of address: Six weeks advance notice to the Executive Office and old address as well as new are necessary for change of subscriber's address.

Concerning advertising, changes of address, and subscriptions, address: Executive Office, American Sociological Association, 1722 N Street, N.W., Washington, D.C. 20036.

Claims for undelivered copies must be made within the month following the regular month of publication. The publishers will supply the missing copies when losses have been sustained in transit and when the reserve stock will permit.

Second class postage paid at Washington, D.C. and additional mailing offices.

Members of the Council

Officers of the Association for the year 1979

HUBERT BLALOCK, *President*

University of Washington

CHARLES Y. GLOCK, *Vice President*

University of California, Berkeley

PETER ROSSI, *President-Elect*

University of Massachusetts, Amherst

HELEN HUGES, *Vice-President Elect*

Cambridge, Massachusetts

JAMES F., SHORT, JR., *Secretary*

Washington State University

RUSSELL R. DYNES, *Executive Officer*

Ohio State University

AMOS H. HAWLEY, *Past President*

North Carolina, Chapel Hill

Elected-at Large

ELISE BOULDING

University of Colorado

ERNEST Q. CAMPBELL

Vanderbilt University

HERBERT L. COSTNER

National Science Foundation

IRWIN DEUTSCHER

University of Akron

WILLIAM A. GAMSON

University of Michigan

RICHARD J. HILL

University of Oregon

HELENA LOPATA

Loyola University, Chicago

PAULINE BART

University of Illinois, Chicago

JOAN MOORE

University of Wisconsin

MORRIS ROSENBERG

University of Maryland

IMMANUEL WALLERSTEIN

SUNY, Binghamton

MAURICE ZEITLIN

University of Cal., Los Angeles

University of Wisconsin

(Articles in the REVIEW are indexed in the Social Sciences Index, Public Affairs Information Service, Psychological Abstracts, Sociological Abstracts, Ayer's Guide, University Microfilms, Abstracts for Social Workers, International Political Science Abstracts, and United States Political Science Documents.)

ITEMS

■ PATRICIA MADOO LENGERMANN (The Founding of the *American Sociological Review*) is Professor of Sociology at George Washington University. She is currently doing research on the Chicago School and its influence on the profession.

■ GLENN FIREBAUGH (Structural Determinants of Urbanization in Asia and Latin America) is Assistant Professor in the Department of Sociology at Vanderbilt University. He is studying the linkages between agriculture and fertility in Third World countries. He is particularly interested in the effect of agricultural density on fertility.

■ IRVING TALLMAN (Values, Distributive Justice and Social Change) is Professor and Chairman in the Department of Sociology at Washington State University. He is author of *Passion, Action and Politics: A Perspective on Social Problems and Social Problem Solving* (Freeman, 1976). He is completing a cross-national study of "Socialization for Social Change" based on data gathered in Mexico and the United States. MARILYN IHINGER-TALLMAN is Assistant Professor in the Department of Sociology at Washington State University. She is beginning a research project on value socialization and sex differences.

(Continued on page 345)

AMERICAN SOCIOLOGICAL REVIEW

Official Journal of the American Sociological Association

JUNE, 1979

VOLUME 44, NUMBER 3

ARTICLES

- king It in America: Differences between Eminent Blacks and White Ethnic Groups Stanley Lieberman and Donna K. Carter 347
- Equal Employment Opportunity Legislation and the Income of Women and Nonwhites Paul Burstein 367
- The Variability of Paradigms in the Production of Culture: A Comparison of the Arts and Sciences Remi Clignet 392
- Gaps and Glissandos: Inequality, Economic Development and Social Mobility in 24 Countries Andrea Tyree, Moshe Semyonov and Robert W. Hodge 410
- Central City White Flight: Racial and Nonracial Causes William H. Frey 425
- Mead vs. Blumer: The Divergent Methodological Perspectives of Social Behaviorism and Symbolic Interactionism Clark McPhail and Cynthia Rexroat 449
- Income Inequality in the Federal Civilian Government Patricia A. Taylor 468
- Suburban Change and Persistence Andrew Collier and Moshe Semyonov 480
- Income Inequality: A Cross-National Study of the Relationships between MNC-Penetration, Dimensions of the Power Structure and Income Distribution Volker Bornschieer and Thanh-Huyen Ballmer-Cao 487

Editor: RITA J. SIMON

Deputy Editors: CLARK MCPHAIL AND ROSS M. STOLZENBERG

Associate Editors: MICHAEL T. AIKEN, ROBERT EVAN COLE, BEVERLY DUNCAN, BERNARD FARBER, DANIEL GLASER, MICHAEL HINDELANG, GISELA J. HINKLE, ROSABETH KANTER, JAMES R. KLUEGEL, BARBARA LASLETT, JOHN LOFLAND, MURRAY MELBIN, ANTHONY OBERSCHALL, VALERIE K. OPPENHEIMER, SAMUEL PRESTON, ALEJANDRO PORTES, BARBARA RESKIN, RICHARD RUBINSON, BARBARA SOBIESZEK, DAVID SNYDER, JOHN WILSON, MAYER ZALD

Copy Editor: MARY S. MANDER

Managing Editor: LINNA McDÁDE

Editorial Assistant: HELEN CURLEY

Executive Officer: RUSSELL R. DYNES

SCOPE AND MISSION OF AMERICAN SOCIOLOGICAL REVIEW: The *American Sociological Review* publishes work of interest to the discipline in general, new theoretical developments, results of research that advances our understanding of the most fundamental social processes, and important methodological innovations. Like other publications of the Association, emphasis is given to exceptional quality. Unlike the more specialized journals of the Association, the *American Sociological Review's* primary focus is on whatever has the most general bearing on the knowledge of society.

Concerning manuscripts, address: Editor, *American Sociological Review*, Department of Sociology, University of Illinois, Urbana, Illinois 61801. (217) 333-6515.

The *American Sociological Review* (ISSN 0003-1224) is published at 49 Sheridan Avenue, Albany, New York, bimonthly in February, April, June, August, October, and December.

Applications for permission to quote from this journal should be addressed to the Executive Office.

Copyright © 1979 American Sociological Association.



Annual membership dues of the Association: Member and International Member, \$30-50; Student Member, \$15; Associate, \$20; Student Associate, \$10; International Associate, \$12.

Application for membership and payment of dues should be made to the Executive Office. Subscription rate for members, \$10; nonmembers, \$15; institutions and libraries, \$30; nonmember students, \$10. Single issue, \$4.

New subscriptions and renewals will be entered on a calendar year basis only.

Change of address: Six weeks advance notice to the Executive Office and old address as well as new are necessary for change of subscriber's address.

Concerning advertising, changes of address, and subscriptions, address: Executive Office, American Sociological Association, 1722 N Street, N.W., Washington, D.C. 20036.

Claims for undelivered copies must be made within the month following the regular month of publication. Publishers will supply the missing copies when losses have been sustained in transit and when stock will permit.

Second class postage paid at Washington, D.C. and additional mailing offices.

Members of the Council

Officers of the Association for the year 1979.

HUBERT BLALOCK, *President*

University of Washington

CHARLES Y. GLOCK, *Vice President*

University of California, Berkeley

PETER ROSSI, *President-Elect*

University of Massachusetts, Amherst

HELEN MACGILL HUGHES, *Vice-President*

Cambridge, Massachusetts

JAMES F., SHORT, JR., *Secretary*

Washington State University

RUSSELL R. DYNES, *Executive Officer*

Ohio State University

AMOS H. HAWLEY, *Past President*

North Carolina, Chapel Hill

Elected-at Large

ELISE BOULDING

University of Colorado

ERNEST Q. CAMPBELL

Vanderbilt University

HERBERT L. COSTNER

National Science Foundation

IRWIN DEUTSCHER

University of Akron

WILLIAM A. GAMSON

University of Michigan

RICHARD J. HILL

University of Oregon

HELENA LOPATA

Loyola University, Chicago

PAULINE BART

University of Illinois, Chicago

JOAN MOORE

University of Wisconsin

MORRIS ROSENBERG

University of Maryland

IMMANUEL WALLERSTEIN

SUNY, Binghamton

MAURICE ZEITLIN

University of Cal., Los Angeles

University of Wisconsin

(Articles in the REVIEW are indexed in the Social Sciences Index, Public Affairs Information Service, Psychological Abstracts, Sociological Abstracts, Ayer's Guide, University Microfilms, Abstracts for Social Workers, International Political Science Abstracts, and United States Political Science Documents.)

ITEMS

■ A Change of the Guard! Rafe Stolzenberg has asked to be relieved of his duties as Deputy Editor beginning July 1979. Joe Spaeth has agreed to join Clark McPhail as our other Deputy Editor. We shall miss Rafe's advice. The editorial staff joins me in a public expression of thanks.

STANLEY LIEBERSON (*Making It in America*)

Professor in the Department of Sociology at the University of Arizona. He will be on leave from the University of Arizona during the 1979-1980 academic year during which time he will hold the Bissell Distinguished Visiting Professorship at the Univer-

sity of Toronto. He has just completed a monograph comparing blacks and South-Eastern European groups in the United States since 1880. DONNA K. CARTER is a Ph.D. Candidate in the Department of Sociology at the University of Arizona. She is completing a dissertation on race and ethnic relations.

■ PAUL BURSTEIN (*EEO Legislation and the Income of Women and Nonwhites*) is Assistant Professor in the Department of Sociology at Yale University. His current research focuses on the causes and consequences of legislative change.

(Continued on page 507)

AMERICAN SOCIOLOGICAL REVIEW

Official Journal of the American Sociological Association

AUGUST, 1979

VOLUME 44, NUMBER 4

ARTICLES

- The Collectivist Organization: An Alternative to Rational Bureaucratic Models Joyce Rothschild-Whitt 509
- The Religious Switcher in the United States Frank Newport 528
- The Social Organization of the American Business Elite and Participation of Corporation Directors in the Governance of American Institutions Michael Useem 553
- Political Democracy and the Timing of Development Kenneth A. Bollen 572
- Social Change and Crime Rate Trends: A Routine Activities Approach Lawrence E. Cohen and Marcus Felson 588
- Intergenerational Occupational Mobility and Fertility: A Reassessment Frank D. Bean and Gray Swicegood 608
- Ethnic Political Mobilization: The Welsh Case Charles C. Ragin 619
- Social Learning and Deviant Behavior: A Specific Test of a General Theory Ronald L. Akers, Marvin D. Krohn, Lonn Lanza-Kaduce, and Marcia Radosevich 635

RESEARCH NOTE

- American Jewish Denominations: A Social and Religious Profile Bernard Lazerwitz and Michael Harrison 656

COMMENTS AND REPLIES

- Comment on Lincoln, Olson and Hanada, ASR December, 1978 Organizational Theory and Cultural Intrusions into Organizations Fred E. Katz 667
- Reply to Katz James R. Lincoln, Jon Olson and Mitsuyo Hanada 668
- Comment on Tittle, Villemez, and Smith, ASR October 1978 Whose Status Counts? Rodney Stark 668
- Reply to Stark Charles R. Tittle, Wayne Villemez and Douglas Smith 669

Editor: RITA J. SIMON

Deputy Editors: CLARK MCPHAIL AND JOE L. SPAETH

Associate Editors: MICHAEL T. AIKEN, ROBERT EVAN COLE, BEVERLY DUNCAN, BERNARD FARBER, DANIEL GLASER, MICHAEL HINDELANG, GISELA J. HINKLE, ROSABETH KANTER, JAMES R. KLUEGEL, BARBARA LASLETT, JOHN LOFLAND, MURRAY MELBIN, ANTHONY OBERSCHALL, VALERIE K. OPPENHEIMER, SAMUEL PRESTON, ALEJANDRO PORTES, BARBARA RESKIN, RICHARD RUBINSON, BARBARA SOBIESZEK, DAVID SNYDER, JOHN WILSON, MAYER ZALD

Copy Editors: MARY S. MANDER
DORIS BARTLE

Managing Editor: LINNA MCDADE

Editorial Assistant: HELEN CURLEY

Executive Officer: RUSSELL R. DYNES

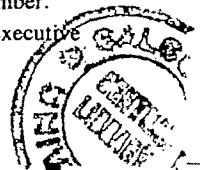
SCOPE AND MISSION OF AMERICAN SOCIOLOGICAL REVIEW: The *American Sociological Review* publishes work of interest to the discipline in general, new theoretical developments, results of research that advances our understanding of the most fundamental social processes, and important methodological innovations. Like other publications of the Association, emphasis is given to exceptional quality. Unlike the more specialized journals of the Association, the *American Sociological Review's* primary focus is on what ever has the most general bearing on the knowledge of society.

Concerning manuscripts, address: Editor, *American Sociological Review*, Department of Sociology, University of Illinois, Urbana, Illinois 61801. (217) 333-6515.

The *American Sociological Review* (ISSN 0003-1224) is published at 49 Sheridan Avenue, Albany, New York, bimonthly in February, April, June, August, October, and December.

Applications for permission to quote from this journal should be addressed to the Executive Office.

Copyright © 1979 American Sociological Association.



Annual membership dues of the Association: Member and International Member, \$30-50; Student Member, \$15; Associate, \$20; Student Associate, \$10; International Associate, \$12.

Application for membership and payment of dues should be made to the Executive Office. Subscription rate for members, \$10; nonmembers, \$15; institutions and libraries, \$30; nonmember students, \$10. Single issue, \$4.

New subscriptions and renewals will be entered on a calendar year basis only.

Change of address: Six weeks advance notice to the Executive Office and old address as well as new are necessary for change of subscriber's address.

Concerning advertising, changes of address, and subscriptions, address: Executive Office, American Sociological Association, 1722 N Street, N.W., Washington, D.C. 20036.

Claims for undelivered copies must be made within the month following the regular month of publication. The publishers will supply the missing copies when losses have been sustained in transit and when the reserve stock will permit.

Second class postage paid at Washington, D.C. and additional mailing offices.

Members of the Council

Officers of the Association for the year 1979

HUBERT BLALOCK, *President*

University of Washington

CHARLES Y. GLOCK, *Vice President*

University of California, Berkeley

PETER ROSSI, *President-Elect*

University of Massachusetts, Amherst

HELEN MACGILL HUGHES, *Vice-President Elect*

Cambridge, Massachusetts

JAMES F. SHORT, JR., *Secretary*

Washington State University

RUSSELL R. DYNES, *Executive Officer*

Ohio State University

AMOS H. HAWLEY, *Past President*

North Carolina, Chapel Hill

Elected-at Large

ELISE BOULDING

University of Colorado

ERNEST Q. CAMPBELL

Vanderbilt University

HERBERT L. COSTNER

National Science Foundation

IRWIN DEUTSCHER

University of Akron

WILLIAM A. GAMSON

University of Michigan

RICHARD J. HILL

University of Oregon

HELENA LOPATA

Loyola University, Chicago

PAULINE BART

University of Illinois, Chicago

JOAN MOORE

University of Wisconsin

MORRIS ROSENBERG

University of Maryland

IMMANUEL WALLERSTEIN

SUNY, Binghamton

MAURICE ZEITLIN

University of Cal., Los Angeles

University of Wisconsin

(Articles in the REVIEW are indexed in the Social Sciences Index, Psychological Abstracts, Sociological Abstracts, Ayer's Guide, University Microfilms, Abstracts for Social Workers, International Political Science Abstracts, and United States Political Science Documents.)

ITEMS

■ JOYCE ROTHCHILD-WHITT (The Collectivist Organization) is Senior Research Associate with the New Systems of Work and Participation Program, New York State School of Industrial and Labor Relations, Cornell University. The research on which this article was based is part of a larger study of worker collectives, presently being prepared as a book manuscript.

■ FRANK NEWPORT (The Religious Switcher in the United States) is Assistant Professor in the Department of Sociology, Anthropology and Social Work at the University of Missouri, St. Louis. He is engaged in studies of the optimum states of inequality in societies and of religion in American society.

■ MICHAEL USEEM (The Social Organization of the American Business Elite) is Associate Professor in the Department of Sociology at Boston University. In 1975, he authored *Protest Movements in America* (Bobbs-Merrill). Currently he is doing a comparative analysis of the social organization and social mobility of the American and British business elites.

■ KENNETH A. BOLLEN (Political Democracy and the Timing of Development) is Associate Senior Research Scientist in the Societal Analysis Department, General Motors Research Laboratories. His research interests include the impact of political instability on international investments and economic

(Continued on page 671)

AMERICAN SOCIOLOGICAL REVIEW

Official Journal of the American Sociological Association

OCTOBER, 1979

VOLUME 44, NUMBER 5

ARTICLES

The Structure of a National Elite Network	Gwen Moore	673
The Open and Closed Question	Howard Schuman and Stanley Presser	692
The Analysis of Oppositional Structures in Political Elites: Identifying Collective Actors	Edward O. Laumann and Peter V. Marsden	713
Small Groups and Culture Creation: The Idioculture of Little League Baseball Teams	Gary Alan Fine	733
Vertical Differentiation among Occupations	Joe L. Spaeth	746
Priest Resignations in a Lazy Monopoly	John Seidler	763
Early Childbearing and Later Economic Well-Being	Sandra L. Hofferth and Kristin A. Moore	784
Entrance into the Academic Career . J. Scott Long, Paul D. Allison, and Robert McGinnis		816

RESEARCH NOTES

Changes in the Sex Role Attitudes of Women, 1962-1977: Evidence from a Panel Study	Arland Thornton and Deborah S. Freedman	832
A Panel Model of Crime Rates and Arrest Rates	David F. Greenberg, Ronald C. Kessler, and Charles H. Logan	843
The Use of Pearson's r with Ordinal Data	Robert M. O'Brien	851

COMMENTS AND REPLIES

Comment on Franke and Kaul, ASR October, 1978 Critique of a Recent Professional "Put-Down"	Walter I. Wardwell	858
The Hawthorne Experiments: Re-View	Richard Herbert Franke	861
Comment on Allison, ASR December, 1978 On Gini's Mean Difference and Gini's Index of Concentration	Guillermina Jasso	867
Reply to Jasso	Paul D. Allison	870
Deterrence and Social Control: A Reply to Grasmick and McLaughlin ASR April, 1978	Matthew Silberman	872

Editor: RITA J. SIMON

Deputy Editors: CLARK MCPHAIL AND JOE L. SPAETH

Associate Editors: MICHAEL T. AIKEN, ROBERT EVAN COLE, BEVERLY DUNCAN, BERNARD FARBER, DANIEL GLASER, MICHAEL HINDELANG, GISELA J. HINKLE, ROSABETH KANTER, JAMES R. KLUEGEL, BARBARA LASLETT, JOHN LOFELAND, MURRAY MELBIN, ANTHONY OBERSCHALL, VALERIE K. OPPENHEIMER, SAMUEL PRESTON, ALEJANDRO PORTES, BARBARA RESKIN, RICHARD RUBINSON, BARBARA SOBIESZEK, DAVID SNYDER, JOHN WILSON, MAYER ZALD

Copy Editors: MARY S. MANDER, ELIZABETH ROBINSON NEUMANN

Managing Editor: LINNA MCDADE

Editorial Assistant: HELEN CURLEY

Executive Officer: RUSSELL R. DYNES

SCOPE AND MISSION OF AMERICAN SOCIOLOGICAL REVIEW: The *American Sociological Review* publishes work of interest to the discipline in general, new theoretical developments, results of research that advances our understanding of the most fundamental social processes, and important methodological innovations. Like other publications of the Association, emphasis is given to exceptional quality. Unlike the more specialized journals of the Association, the *American Sociological Review's* primary focus is on whatever has the most general bearing on the knowledge of society.

Concerning manuscripts, address: Editor, *American Sociological Review*, Department of Sociology, University of Illinois, Urbana, Illinois 61801. (217) 333-6515.



The *American Sociological Review* (ISSN 0003-1224) is published at 49 Sheridan Avenue, Albany, New York, bimonthly in February, April, June, August, October, and December.

Applications for permission to quote from this journal should be addressed to the Executive Office.

Copyright © 1979 American Sociological Association.

Annual membership dues of the Association: Member and International Member, \$30-50; Student Member, \$15; Associate, \$20; Student Associate, \$10; International Associate, \$12.

Application for membership and payment of dues should be made to the Executive Office. Subscription rate for members, \$10; nonmembers, \$15; institutions and libraries, \$30; nonmember students, \$10. Single issue, \$4.

New subscriptions and renewals will be entered on a calendar year basis only.

Change of address: Six weeks advance notice to the Executive Office and old address as well as new are necessary for change of subscriber's address.

Concerning advertising, changes of address, and subscriptions, address: Executive Office, American Sociological Association, 1722 N Street, N.W., Washington, D.C. 20036.

Claims for undelivered copies must be made within the month following the regular month of publication. The publishers will supply the missing copies when losses have been sustained in transit and when the reserve stock will permit.

Second class postage paid at Washington, D.C. and additional mailing offices.

Members of the Council

Officers of the Association for the year 1979

HUBERT BLALOCK, *President*

University of Washington

CHARLES Y. GLOCK, *Vice President*

University of California, Berkeley

PETER ROSSI, *President-Elect*

University of Massachusetts, Amherst

HELEN MACGILL HUGHES, *Vice-President Elect*

Cambridge, Massachusetts

JAMES F., SHORT, JR., *Secretary*

Washington State University

RUSSELL R. DYNES, *Executive Officer*

Ohio State University

AMOS H. HAWLEY, *Past President*

North Carolina, Chapel Hill

Elected-at Large

ELISE BOULDING

University of Colorado

ERNEST Q. CAMPBELL

Vanderbilt University

HERBERT L. COSTNER

National Science Foundation

IRWIN DEUTSCHER

University of Akron

WILLIAM A. GAMSON

University of Michigan

RICHARD J. HILL

University of Oregon

HELENA LOPATA

Loyola University, Chicago

PAULINE BART

University of Illinois, Chicago

JOAN MOORE

University of Wisconsin

MORRIS ROSENBERG

University of Maryland

IMMANUEL WALLERSTEIN

SUNY, Binghamton

MAURICE ZEITLIN

University of Cal., Los Angeles

University of Wisconsin

(Articles in the REVIEW are indexed in the Social Sciences Index, Psychological Abstracts, Sociological Abstracts, Ayer's Guide, University Microfilms, Abstracts for Social Workers, International Political Science Abstracts, and United States Political Science Documents.)

ITEMS

■ GWEN MOORE (The Structure of a National Elite Network) is Assistant Professor in the Department of Sociology, SUNY/Brockport. She also is Visiting Assistant Professor of Sociology at Cornell University. She is working on a comparative study of national elite networks in Australia and the United States. She plans to begin work on a cross-national study of political elite networks in industrial societies.

■ HOWARD SCHUMAN (The Open and Closed Question) is Professor of Sociology and Program Director at the Institute for Social Research, University of Michigan, Ann Arbor. His recent research has

centered on the nature of the question process in survey research. He is preparing (with S. Presser) a book on the subject. STANLEY PRESSER is Research Associate at the Institute for Research in Social Science and Visiting Assistant Professor in the Department of Sociology, University of North Carolina, Chapel Hill. He is collaborating with H. Schuman on question-wording in survey research. He is also engaged in a study (with E. Martin) of Louis Harris's public opinion data.

■ EDWARD O. LAUMANN (Oppositional Structures in Political Elites) is Professor of Sociology at
(Continued on page 880)

AMERICAN SOCIOLOGICAL REVIEW

Official Journal of the American Sociological Association

DECEMBER, 1979

VOLUME 44, NUMBER 6

ARTICLES

- The Presidential Address: Measurement and Conceptualization Problems: The Major Obstacle to Integrating Theory and Research H. M. Blalock, Jr. 881
- The Contradiction of Domination and Production in Bureaucracy: The Contribution of Organizational Efficiency to the Decline of the Roman Empire Robert J. Antonio 895
- Inequality and Police Strength: Conflict Theory and Coercive Control in Metropolitan Areas David Jacobs 913
- The Paradigm Concept and Sociology: A Critical Review Douglas Lee Eckberg and Lester Hill, Jr. 925
- Suburban Status Evolution/Persistence: A Structural Model John M. Stahura 937
- Entry into Early Adolescence: The Impact of School Structure, Puberty, and Early Dating on Self-Esteem Roberta G. Simmons, Dale A. Blyth, Edward F. Van Cleave, and Diane Mitsch Bush 948
- Temporal Changes in Work Content Kenneth I. Spenner 968
- White Movement to the Suburbs: A Comparison of Explanations Harvey Marshall 975
- Correlates of Delinquency: The Illusion of Discrepancy between Self-Report and Official Measures Michael J. Hindelang, Travis Hirschi, and Joseph G. Weis 995

RESEARCH NOTE

- Effects of Socioeconomic Factors on the Residential Segregation of Blacks and Spanish Americans in United States Urbanized Areas Douglas S. Massey 1015

OTHER

- The Editor's Items 880
- 1979 Editorial Consultants 1024
- 1979 Index, Volume 44, Numbers 1-6 1027

Editor: RITA J. SIMON

Deputy Editors: CLARK McPHAIL AND JOE L. SPAETH

Associate Editors: MICHAEL T. AIKEN, ROBERT EVAN COLE, BEVERLY DUNCAN, BERNARD FARBER, DANIEL GLASER, MICHAEL HINDELANG, GISELA J. HINKLE, ROSABETH KANTER, JAMES R. KLUEGEL, BARBARA LASLETT, JOHN LOFLAND, MURRAY MELBIN, ANTHONY OBERSCHALL, VALERIE K. OPPENHEIMER, SAMUEL PRESTON, ALEJANDRO PORTES, BARBARA RESKIN, RICHARD RUBINSON, BARBARA SOBIESZEK, DAVID SNYDER, JOHN WILSON, MAYER ZALD

Copy Editors: MARY S. MANDER, ELIZABETH ROBINSON NEUMANN

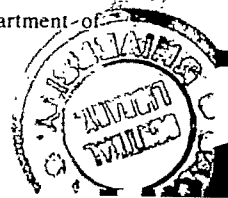
Managing Editor: LINNA McDADE

Editorial Assistant: HELEN CURLEY

Executive Officer: RUSSELL R. DYNES

SCOPE AND MISSION OF AMERICAN SOCIOLOGICAL REVIEW: The *American Sociological Review* publishes work of interest to the discipline in general, new theoretical developments, results of research that advances our understanding of the most fundamental social processes, and important methodological innovations. Like other publications of the Association, emphasis is given to exceptional quality. Unlike the more specialized journals of the Association, the *American Sociological Review's* primary focus is on whatever has the most general bearing on the knowledge of society.

Concerning manuscripts, address: Editor, *American Sociological Review*, Department of Sociology, University of Illinois, Urbana, Illinois 61801. (217) 333-6515.



The *American Sociological Review* (ISSN 0003-1224) is published at 49 Sheridan Avenue, Albany, New York, bimonthly in February, April, June, August, October, and December.

Applications for permission to quote from this journal should be addressed to the Executive Office.

Copyright © 1979 American Sociological Association.

Annual membership dues of the Association: Member and International Member, \$30-50; Student Member, \$15; Associate, \$20; Student Associate, \$10; International Associate, \$12.

Application for membership and payment of dues should be made to the Executive Office. Subscription rate for members, \$10; nonmembers, \$15; institutions and libraries, \$30; nonmember students, \$10. Single issue, \$4.

New subscriptions and renewals will be entered on a calendar year basis only.

Change of address: Six weeks advance notice to the Executive Office and old address as well as new are necessary for change of subscriber's address.

Concerning advertising, changes of address, and subscriptions, address: Executive Office, American Sociological Association, 1722 N Street, N.W., Washington, D.C. 20036.

Claims for undelivered copies must be made within the month following the regular month of publication. The publishers will supply the missing copies when losses have been sustained in transit and when the reserve stock will permit.

Second class postage paid at Washington, D.C. and additional mailing offices.

Members of the Council

Officers of the Association for the year 1979

HUBERT BLALOCK, *President*

University of Washington

CHARLES Y. GLOCK, *Vice President*

University of California, Berkeley

PETER ROSSI, *President-Elect*

University of Massachusetts, Amherst

HELEN MACGILL HUGHES, *Vice-President Elect*

Cambridge, Massachusetts

JAMES F., SHORT, JR., *Secretary*

Washington State University

RUSSELL R. DYNES, *Executive Officer*

Ohio State University

AMOS H. HAWLEY, *Past President*

North Carolina, Chapel Hill

Elected-at Large

ELISE BOULDING

University of Colorado

ERNEST Q. CAMPBELL

Vanderbilt University

HERBERT L. COSTNER

National Science Foundation

IRWIN DEUTSCHER

University of Akron

WILLIAM A. GAMSON

University of Michigan

RICHARD J. HILL

University of Oregon

HELENA LOPATA

Loyola University, Chicago

PAULINE BART

University of Illinois, Chicago

JOAN MOORE

University of Wisconsin

MORRIS ROSENBERG

University of Maryland

IMMANUEL WALLERSTEIN

SUNY, Binghamton

MAURICE ZEITLIN

University of Cal., Los Angeles

University of Wisconsin

(Articles in the REVIEW are indexed in the Social Sciences Index, Psychological Abstracts, Sociological Abstracts, Ayer's Guide, University Microfilms, Abstracts for Social Workers, International Political Science Abstracts, and United States Political Science Documents.)

ITEMS

■ I would like to take this opportunity to thank the three members of our Editorial Board who have served their three-year term and have now been relieved of their editorial responsibilities. I want to thank Michael Aiken, Barbara Laslett, and Barbara Sobieszek for their conscientious and helpful reviews. As all of you know, without the cooperation of our colleagues, it would be impossible for us to function.

Let me also take this occasion to welcome on board our six new advisory editors: Paul Burstein, Thomas Fararo, Michael Moch, Jeffrey Pfeffer, Charles Tucker, and Lynne Zucker.

With the resignation of Beverly Duncan, we lost the services of one of our best reviewers. We appreciate the time and effort that she devoted to the ASR and we will miss her.

■ H. M. BLALOCK, JR. (Measurement and Conceptualization Problems) is Professor in the Department of Sociology at the University of Washington, Seattle. In 1979, he co-authored (with Paul H. Wilken): *Intergroup Processes: A Micro-Macro Approach* (Free Press). Also published in 1979 (Praeger) was his *Black-White Relations in the 1980's: Toward a Long-Term Policy*. His current re-

(Continued on page 1023)

AMERICAN SOCIOLOGICAL REVIEW

A STUDY OF *THE BEHAVIOR OF LAW**

MICHAEL R. GOTTFREDSON

State University of New York, Albany

MICHAEL J. HINDELANG

State University of New York, Albany

American Sociological Review 1979, Vol. 44 (February):3-18

In *The Behavior of Law*, Black (1976) sets forth a theory of law that he argues explains variations in law across societies and among individuals within societies. Black argues that law can be conceived of as a quantitative variable, measured by the number and scope of prohibitions, obligations and other standards to which people are subject. Law varies, according to Black, with other aspects of social life, including stratification, morphology, culture, organization, and social control. Many of Black's principal propositions regarding the quantity of law are tested in this paper with National Crime Survey data on the victim's decision to report a crime to the police. An alternative model that views the quantity of law as depending largely on the gravity of the infraction against legal norms is posed and tested against Black's theory. The data are generally inconsistent with the propositions derived from *The Behavior of Law* and strongly suggest that a theory attempting to explain the criminal law cannot ignore the gravity of the infraction against legal norms.

Introduction

The Behavior of Law (Black, 1976) has been referred to as a "crashing classic" (Nader, n.d.) and the most important contribution ever made to the sociology of law—"that and more" (Sherman, 1978). Although Black's theory has also been criticized as "circular" (Michaels, 1978), it is apparent that it will be the stimulus for a great deal of research in coming years. This is so because Black's theory of law is stated in explicit propositional form and because he sees the theory as applying to so many aspects of law (e.g., both criminal and civil) and at so many levels of analysis (e.g., individual level, community level, and societal level).

Black defines law as "governmental social control" (1976:2) and argues that law is a quantitative variable that varies across time and space as well as across characteristics of individuals:

... the quantity of law is known by the number and scope of prohibitions, obli-

tions, and other standards to which people are subject, and by the rate of legislation, litigation, and adjudication. . . . Any initiation, invocation, or application of law increases its quantity. . . . (1976:3)

According to Black, the quantity of law varies with other aspects of social life: stratification, morphology, culture, organization, and social control. In connection with each of these dimensions Black sets forth a series of propositions that he argues explain variations in law across societies and among individuals within a given society (1976:6-7).¹ For example, "law varies directly with rank [e.g., income]. . . . People with less wealth have less law. They are less likely to call upon the law in dealing with one another" (1976:17). In this paper we will examine many of Black's propositions, empirically test their predictions, and discuss the implications for the sociology of criminal law.

* Address all communications to: Michael R. Gottfredson; Criminal Justice Research Center; One Alton Road; Albany, NY 12203.

¹ Black discusses "styles of law" as well as quantity of law. The styles include penal, compensatory, therapeutic and conciliatory (Black, 1976:4-5). Because of the nature of our data, we will limit our discussion to penal (criminal) law.

The task that Black (1976:7) sets for himself is to illustrate a strategy for the construction of sociological theory that "... predicts and explains social life without regard to the individual as such. It neither assumes nor implies that he is, for instance, rational, goal-directed, pleasure seeking, or pain avoiding." Black is particularly concerned about avoiding explanations that rely on individual *motivation*. For example, he argues repeatedly that both the theory of law and "the theory of illegal behavior" explain the same facts (e.g., the crime rate).

The theory of illegal behavior, however, explains these facts with the principles that motivate an individual to violate the law. . . . The theory of law predicts the same facts, but as an aspect of the behavior of law, not of the motivation of the individual. (Black, 1976:9)

As a consequence of this macrotheoretical approach, Black is careful to avoid explanations or propositions that rely directly upon variations in the behavior of individuals. He argues that the behavior of law, *in all respects*, can be explained by social structural variations and by the relative social structural positions of the actors (e.g., the victim and the offender), without reference to how the nature of individual behavior affects the behavior of law.

One of the major difficulties facing those who would test Black's theory of law is that he is not explicit about how the objective seriousness of the offense should be handled. Contrary to the traditional sociological use of the term *seriousness*, as incorporating the consequences of acts to individuals, such as bodily injury or financial loss (see Sellin and Wolfgang, 1964), Black defines the seriousness of infractions by the amount of law that they evoke. Thus, Black argues that "[i]f a poor man commits a crime against another poor man, for example, this is less serious than if both are wealthy. Less happens . . .," and that "the more organized the victim of a crime, for instance, the more serious is the offense" (Black, 1976:17,95). For Black (1976:9), "... the seriousness of deviant behavior is defined by the quantity of law to which it is subject." What this implies,

therefore, is that Black's entire theoretical framework is designed to account for the quantity of law without including the consequences of the deviance to the victim as a dimension of the theory. This is so because the quantity of law is Black's dependent variable—a quantity that varies as a function of stratification, morphology, culture, organization, and (nonlegal) social control—and, thus, "seriousness" is not defined apart from the dependent variable itself. Hence, Black does not use seriousness in its traditional sense to *explain* variations in the quantity of law. None of the formal propositions presented incorporates harm to the victim as a consideration, and never is variation in litigation, arrest, prosecution, or sentencing accounted for by Black in terms of variation in *conduct*.

Although Black frequently uses such phrases as "all else constant" (e.g., Black, 1976:28,47,114) when stating a theoretical proposition, such qualifications can reasonably apply only to variables included in the theory. If "all else constant" can refer to variables not incorporated by the theory then the theory must be rejected as untestable. If "all else" is limited to dimensions and propositions formally specified by Black, then the consequences of legal infractions to individuals must be considered by Black to be irrelevant in accounting for the quantity of law. For example, in connection with his stratification propositions, Black (1976:31) notes "... that these principles apply whatever the actual behavior of the lower ranks—whether, for example, it is more or less violent or predatory—since their conduct is more likely to be defined as illegal no matter what they do." On the basis of such statements and the context within which Black discusses his theory of law, he must be interpreted as arguing that the *individual* consequences of legal infractions, such things as injury and monetary loss, are not an important consideration in explaining the behavior of law. At a minimum, he must be interpreted as arguing that the individual consequences of legal infractions, such as harm to victims of crimes (seriousness of the offense in its conventional use), are less important than stratification, morphology, culture, orga-

nization, and social control in determining the behavior of law. An alternative to Black's theory of law, therefore, is one that explains the behavior of law as a function of the individual consequences of legal infractions (such as harm to the victim) rather than as a function of Black's five dimensions (and their associated propositions). Our alternative model is simply that the behavior of criminal law depends primarily on what happens between the victim and the offender; the extent of harm suffered is the principal determinant of the quantity of law.

The Data

Many of the propositions set forth by Black can be tested using data available from the National Crime Survey (NCS) conducted by the Bureau of the Census for the Law Enforcement Assistance Administration. Because the methods and procedures used in these victimization surveys have been discussed in detail elsewhere (U.S. Bureau of the Census, 1975; Hindelang et al., 1978), they will be described only briefly here.

In these surveys, multistage cluster sampling is used to select representative samples of Americans twelve years of age or older in order to ask them about common assault and theft victimizations that they may have suffered during the six months preceding the interview. In this design about 130,000 persons are interviewed twice per year. The data used here are for crimes reported as having occurred during 1974, 1975, or 1976. This paper is limited to personal crimes in which there was some actual contact between the victim and the offender—rape, robbery, assault, and personal larceny (e.g., purse snatch). Because of the complex sampling design, data *weighted* to yield valid national estimates are used here. For these years the mean weight is about 1,000.²

The victimization survey data are particularly well-suited to testing many of Black's propositions because he explicitly frames much of his discussion in terms of

criminal law examples, such as complaints to the police, arrests, and prosecutions. The victimization survey data not only contain the requisite information Black discusses about the victim (e.g., social rank) and the offender (e.g., number of offenders) but also contain the information necessary to assess a variety of ecological propositions set forth by Black. Furthermore, one of the principal measures of the quantity of law discussed by Black (1976:3) is complaint to the police:

A complaint to a legal official, for example, is more law than no complaint, whether it is a call to the police, a visit to a regulatory agency, or a lawsuit. Each is an increase in the quantity of law.

For the crimes of common theft and assault, initiation of the criminal justice process is almost exclusively in the hands of the victim (Reiss, 1971; Hindelang and Gottfredson, 1976). Because victimization data include both crimes reported to the police and crimes not reported to the police, they permit an empirical assessment of many of Black's propositions regarding *initiation* of the criminal law. Consequently, most of this paper will center on Black's propositions within the context of the victim's decision about reporting the offense to the police. With the victimization survey data it is possible to assess propositions relating to each of Black's five major dimensions. The first of these is stratification.

Stratification

Black (1976:11) defines stratification as the "vertical aspect of social life," the "uneven distribution of the material conditions of existence, such as food and shelter, and the means by which these are produced, such as land, raw materials, tools, domestic animals, and slaves." According to Black, the quantity of law varies directly with social rank, and downward law (e.g., a complaint by a wealthier man against a poorer man) is more likely than upward law:

In the case of a crime, for instance, a victim who is above the offender in rank is more likely to call the police than a victim whose rank is lower than the offender's Hold

² The weights reflect the inverse of the probability of selection, adjusted for within-strata nonresponse, among other factors. See U.S. Bureau of the Census (1975) for details.

constant the offender's rank and wealthier people complain more about everything. In criminal matters, for instance, the likelihood of a call to the police increases with the rank of the victim. (1976:21, 27)

With the victimization survey data it is possible to test this proposition by examining the extent to which reporting crimes to the police varies as a function of the social rank of the victim. Most research literature indicates that offenders in crimes of *common theft and assault* are drawn disproportionately from lower ranks. Because Black (1976:31, 30) stipulates these findings ("... criminality varies inversely with rank . . ."), from his stipulation and his proposition it follows that the proportion of victims reporting their victimizations to the police will increase with the victim's rank. Table 1 shows the relationship between the victim's family income (Black's principal indicator of social rank) and proportionate reporting of victimizations to the police.³

In order to examine the effects of harm to the victim on reporting to the police, the data in Table 1 are tabulated also by seriousness level as measured by the Sellin-Wolfgang (1964) seriousness scale. This seriousness scoring system was developed using a magnitude estimation procedure and it is designed to take into account the extent and nature of bodily injury, weapon use, intimidation, forcible sexual intercourse, and financial loss.⁴

³ Victims were asked whether "the police were informed of this incident in any way?" Those responding "no" or "don't know" were classified as "no" for the purpose of this paper. "Yes" included victimizations reported to the police by the victim or someone in the victim's household, victimizations reported by "someone else" and victimizations in which the "police [were] on the scene." Virtually all of the "yes" responses (95%) involved reports to the police.

⁴ According to this method elements of the victimization are scored for seriousness resulting in seriousness scores that range from zero to 26. A victimization resulting in a score of zero would be an attempted crime in which no injury or loss was suffered and in which no weapon was used. A score of 26 is indicative of a homicide, although homicide is not among the crimes counted in the survey. Victimization events are concentrated among the lower seriousness scores (Hindelang, 1976: Chap. 6). In order to have a sufficient number of (unweighted) victimizations, four seriousness levels were used: level 1 = 0 and 1; level 2 = 2 and 3; level 3 = 4 and 5; and level 4 = 6 or more.

Table 1 shows a substantial seriousness effect; as the gravity of the victimization increases so too does reporting to the police. Contrary to Black's hypothesis, however, there is little systematic variability in rates of reporting to the police, as a function of income. Collapsing across seriousness level, the gamma for Table 1 between reporting to the police and family income is $-.017$; within seriousness levels the gammas range from $-.037$ to $.110$. On the other hand, the gamma for the relationship between reporting and seriousness level (collapsing across income) is $.305$. This effect is of similar magnitude within income categories (gammas range from $.260$ to $.453$). Clearly, Table 1 is not consistent with Black's stratification postulate.

One need not accept the stipulation made by Black regarding the inverse relationship between criminality and rank in order to assess Black's stratification postulate with these data. A corollary to the proposition tested above is that people with less wealth are "less likely to call upon law in their dealings with one another . . ." (1976:17). What this implies, then, is that victimizations between persons known to each other (and, hence, likely to be similar in social rank) are more likely to be reported to the police by persons of higher rank than by persons of lower rank. Respondents in the survey were asked whether the offender was someone known to them (a relative, a good friend, or a casual acquaintance) or was a stranger. The data presented in Table 1 were analyzed separately for crimes involving persons reported by victims to be nonstrangers. The results for crimes between nonstrangers, shown in Table 2, are parallel to those shown in Table 1. For nonstranger victimizations only, collapsing across seriousness, the gamma between income and reporting to the police is equal to $-.102$; within seriousness levels gammas ranged from $-.110$ to $.050$. Thus, Black's prediction that people with less wealth are less likely to call upon law in their dealings with one another does not find support in these data.

Another stratification hypothesis put forth by Black (1976:15) is that wherever people are more equal there is less law:

Table 1. Proportion of Victimization^a Reported to the Police, by Seriousness Level and Family Income, United States, 1974-1976^b

Seriousness level	Family Income						Total	Gamma ^c
	Under \$3,000	\$3,000-7,499	\$7,500-9,999	\$10,000-14,999	\$15,000-24,999	\$25,000 or over		
1	37% (597,981)	38% (1,074,219)	42% (536,633)	39% (1,020,397)	39% (884,764)	24% (314,841)	38% (4,428,835)	-.037
2	38% (911,012)	40% (1,613,392)	41% (784,072)	41% (1,551,184)	36% (1,360,122)	37% (520,612)	39% (6,740,394)	-.022
3	45% (648,790)	52% (1,371,611)	54% (601,848)	57% (1,201,633)	54% (925,056)	56% (276,855)	53% (5,025,793)	.076
4	68% (377,851)	74% (615,133)	72% (228,923)	80% (355,202)	78% (264,070)	72% (100,547)	74% (1,941,726)	.110
Total	44% (2,535,634)	48% (4,674,355)	48% (2,151,476)	48% (4,128,416)	45% (3,434,012)	41% (1,212,855)		-.017

^a Includes rape, robbery, assault, and personal larceny.

^b Numbers in parenthesis are the weighted counts which serve as the base of the percentages.

^c Each gamma was computed from a 2x6 table (reported vs. not reported by income level). For example, the gamma listed for seriousness level one reflects the relationship between reporting to the police and income level, with level of seriousness controlled. The gamma listed for the Total row reflects the relationship between reporting to the police and income level irrespective of seriousness level.

"there is less law among neighbors, colleagues, [and] friends. . . ." Table 2 also presents data useful in assessing this proposition. Black's theory predicts that crimes between strangers are more likely than crimes between nonstrangers to be reported to the police. An examination of the percentage differences in proportions reporting to the police crimes committed by strangers vs. crimes committed by nonstrangers for the cells of Table 2 reveals a mean difference of only 4% in the direction predicted by Black.⁵

In addition to stratification effects at the individual level, Black's theory of law is equally applicable to variations in law across aggregates. In relation to stratification:

It is even possible to rank entire societies among themselves, and also the areas of society, its regions, communities, and

neighborhoods. This may be done either according to the distribution of wealth among the residents or according to the wealth of the society or area itself. In the first case, law varies with the proportion of the population that is more or less wealthy. (Black, 1976:20)

By categorizing respondents in the sample into "neighborhood" subgroups, it is possible to examine variation in the proportion of victims reporting their victimizations to the police. For most victims it was possible to obtain "neighborhood characteristic" information. This information is derived by the Bureau of the Census through an aggregation process in which census tracts are combined to form larger units that are relatively homogeneous with respect to income, housing, and population characteristics. The Census Bureau's term, neighborhood characteristic, is a misnomer because it connotes aggregates of *contiguous* census tracts which is not necessarily the case. Our use of these data, however, will be limited to using the neighborhood characteristics to categorize areas into more homogeneous subgroups. It is primarily the similarity of areas, for example in wealth, rather than contiguity that appears to be most relevant to Black's theory of law.

Table 3 displays the percentages of survey victimizations reported to the police by seriousness level and the proportion of

⁵ In connection with the data reported in Table 2 it is important to note that there is some evidence from reverse record checks that victimizations between persons known to each other are somewhat less likely than victimizations between strangers to be mentioned to survey interviewers (Law Enforcement Assistance Administration, 1972: Table 5). The first hypothesis tested with the data in Table 2 is unaffected by this factor, because there is no evidence of a differential in this bias as a function of income level. The second hypothesis, contrasting strangers and nonstrangers, is probably affected because nonstranger victimizations are disproportionately undercounted by the survey. This bias probably works against Black's hypothesis.

Table 2. Proportion of Victimization Reported to the Police by Seriousness Level, Family Income, and Prior Relationship between the Victim and Offender, United States, 1974-1976

Seriousness Level		Family Income						Total	Gamma
		Under \$3,000	\$3,000-7,499	\$7,500-9,999	\$10,000-14,999	\$15,000-24,999	\$25,000 or Over		
1	Nonstranger	36% (262,625)	41% (421,641)	42% (190,624)	31% (383,929)	35% (270,605)	22% (90,419)	36% (1,619,843)	-.095
	Stranger	38% (335,356)	36% (652,578)	42% (346,009)	43% (636,467)	41% (614,159)	25% (224,422)	38% (2,808,991)	
2	Nonstranger	19% (306,874)	39% (529,671)	38% (252,849)	35% (414,426)	30% (391,541)	29% (144,283)	36% (2,039,644)	-.110
	Stranger	37% (604,138)	40% (1,083,722)	42% (531,223)	43% (1,136,758)	39% (968,581)	40% (376,329)	40% (4,700,751)	
3	Nonstranger	47% (274,164)	53% (533,587)	51% (199,253)	47% (310,515)	46% (231,362)	51% (67,720)	49% (1,616,601)	-.030
	Stranger	44% (374,626)	52% (838,025)	56% (402,595)	60% (891,118)	57% (693,694)	58% (209,135)	55% (3,409,193)	
4	Nonstranger	69% (100,851)	73% (132,599)	62% (60,141)	82% (64,054)	72% (35,211)	68% (14,778)	72% (407,634)	.050
	Stranger	68% (277,000)	74% (482,534)	76% (168,782)	79% (291,148)	79% (228,859)	72% (85,769)	75% (1,534,092)	
Total	Nonstranger	44% (944,514)	47% (1,617,498)	45% (702,867)	40% (1,172,924)	37% (928,719)	34% (317,200)	42% (5,683,722)	-.102
	Stranger	44% (1,591,120)	48% (3,056,859)	50% (1,448,609)	52% (2,955,491)	48% (2,505,293)	44% (895,655)	48% (12,453,027)	

Table 3. Proportion of Victimization Reported to Police by Seriousness Level and Ratio of Number of Families in Respondent's Neighborhood with Annual Incomes under \$5,000 to Total Families in Neighborhood, United States, 1974-1976

Seriousness Level	Proportion of Families in Respondent's Neighborhood with incomes under \$5,000				Total	Gamma
	0-10%	11-20%	21-30%	31-100%		
1	35% (1,108,504)	37% (1,524,432)	38% (839,712)	37% (745,554)	37% (4,218,202)	.023
2	37% (1,671,796)	37% (2,297,852)	41% (1,364,830)	41% (1,185,060)	39% (6,519,538)	.047
3	54% (1,126,276)	54% (1,641,788)	56% (997,065)	47% (989,873)	53% (4,755,002)	-.051
4	75% (393,980)	75% (608,400)	73% (419,024)	70% (506,002)	73% (1,927,406)	-.069
Total	45% (4,300,556)	46% (6,072,472)	48% (3,620,631)	46% (3,426,488)		.026

families within the victim's neighborhood with annual family incomes of less than \$5,000. According to Black's theory of law, as the proportion of families under \$5,000 increases, the rate of reporting to the police decreases. Once again, even at this level of aggregation, reporting is consistently related to seriousness level within each category of neighborhood income level. There is, however, little systematic evidence to support the proposition derived from Black's theory of law. In addition, when the data are regrouped according to the percentage of all families with an annual family income of \$15,000 or more, the very slight effect in Table 3 changes to a trend of a similarly weak magnitude *opposite* to that predicted by his theory. In sum, areal stratification does not produce findings of notable magnitude nor findings consistently in the direction required by the theory.

Morphology

The second dimension relevant to Black's (1976:37) theory of law is morphology:

Morphology is the horizontal aspect of social life, the distribution of people in relation to one another, including their division of labor, networks of interaction, intimacy, and integration. It varies across social settings of every kind, whether societies, communities, neighborhoods, or organizations. . . . One village or tribe may have a greater division of labor—more differentiation—than another Some settings are intimate, others im-

personal. In some, nearly every one participates in everything) in others, many are marginal or alone.

Morphology is a central dimension in *The Behavior of Law* because of its implications for the degree to which people are involved in each other's lives (Black, 1976:40). Black contends that law is inactive among intimates and is used increasingly as relational distance increases, until the point at which people exist entirely independently of each other, a point rarely reached in modern societies. This observation is embodied in the proposition that "the relationship between law and relational distance is curvilinear" (Black, 1976:41). Up to a point, Black (1976:46) notes, a community's size is predictive of its rate of litigation.

This derivation can be tested with the victimization survey data by examining the relationship between the size of the community in which the victim resides and the proportion of respondents who told interviewers that they had reported the victimization to the police. From the victimization data it is possible to obtain the size of the place in which the respondent resided at the time of the interview. These place sizes have been divided into six groups as shown in Table 4. According to Black's theory of law, as place size increases, so too should the proportion of victimizations reported to the police.

The data in Table 4 do not support the hypothesis. At each seriousness level the general trend is for the rate of reporting to

Table 4. Proportions of Victimitizations Reported to the Police, by Seriousness Level, and Size of Place, United States, 1974-1976^a

Seriousness Level	Place Size						Total	Gamma
	Under 10,000	10,000-49,000	50,000-249,000	250,000-499,999	500,000-999,999	1,000,000 or more		
1	44% (546,280)	37% (957,077)	37% (970,599)	34% (309,680)	31% (457,445)	32% (466,765)	36% (3,707,846)	-.112
2	46% (792,968)	38% (1,385,821)	37% (1,395,100)	33% (540,047)	38% (730,028)	38% (776,311)	38% (5,620,275)	-.060
3	53% (629,018)	57% (1,001,677)	54% (980,465)	49% (405,247)	50% (505,470)	54% (646,540)	54% (4,168,417)	-.034
4	82% (201,721)	73% (361,688)	76% (345,854)	70% (170,045)	68% (238,581)	72% (406,385)	73% (1,724,274)	-.096
Total	51% (2,169,986)	46% (3,706,262)	45% (3,692,019)	42% (1,425,018)	43% (1,931,525)	47% (2,296,001)		-.041

^a Cases in which the place size has not been classified by the Bureau of the Census are not included in this table.

the police to decrease as the size of the place in which the respondent lives increases.

Among morphological variables Black includes radial location, the proximity of individuals to the center of social life. Employed persons are more integrated than unemployed and married persons are more integrated than single persons (Black, 1976:48). The proposition related to radial location is that "law varies directly with integration" (1976:48). From this it follows that (other things being equal), for example, persons who are unmarried and unemployed will have lower rates of reporting to the police than will persons who are married and employed. To test this proposition, respondents were categorized with respect to marital status and employment status. For this purpose, persons keeping house were categorized as employed.⁶

Table 5 shows rates of reporting to the police by employment status and marital status. A comparison of proportions reporting their victimizations to the police among those who were married vs. those who were never married indicates that the former are more likely than the latter to invoke the criminal justice process. This tendency is slightly greater for less serious victimizations.⁷ Because Black views

married people as more integrated than single people these results are consistent with his radical location hypothesis. Employment status, a second indicator of social integration, however, is not consistently related to reporting to the police in the direction predicted by Black's theory of law. Furthermore, to the extent that being in school is viewed as being more integrated than being unemployed, the data are generally inconsistent with the integration proposition.⁸ For example, among persons who have never been married, those in school were *less* likely than those unemployed to report victimizations to the police (e.g., seriousness level 1, 29% vs. 35%).

Black also hypothesizes that the quantity of law is related to population density. The greater the density, the greater the law. A density indicator available among the neighborhood characteristics is the ratio of the number of housing units in structures containing five or more units to the total number of housing units. Contrary to his theory of law, there is a slight trend for the proportion of victimizations reported to the police to decrease as population density increases (data not shown in tabular form). For the least serious victimi-

⁶ The "other" category shown in Table 5 includes retired persons and persons who were unable to work. When tabulated separately "persons keeping house" were found to have rates of reporting similar to those of employed persons.

⁷ Because of the number of cells in relation to the

number of unweighted cases available, for this portion of the analysis it was necessary to dichotomize seriousness. Low seriousness includes Sellin-Wolfgang scores 0 through 3 and high seriousness includes scores of 4 or more.

⁸ Respondents were dichotomized into those under 35 and those 35 and older and these findings maintained.

Table 5. Proportion of Victimization Reported to the Police, by Seriousness Level, Marital Status, and Employment Status, United States, 1974-1976

Seriousness Level	Marital Status											
	Married				Widowed, Separated or Divorced				Never Married			
	Employed	Un-employed	In School	Other	Employed	Un-employed	In School	Other	Employed	Un-employed	In School	Other
1	49% (3,488,813)	48% (99,039)	40% (69,024)	49% (158,301)	46% (1,455,632)	40% (77,181)	58% (41,057)	39% (207,950)	35% (2,003,256)	35% (234,409)	29% (1,186,356)	35% (83,550)
2	70% (2,282,872)	61% (106,637)	51% (60,926)	64% (159,788)	64% (1,046,157)	62% (83,265)	61% (38,268)	64% (157,244)	55% (1,337,286)	52% (191,035)	44% (670,096)	65% (56,733)

zations, 40% of victims residing in areas with no housing units in structures containing five or more units and 32% of victims residing in areas with more than 15% of housing units in structures containing five or more units, reported their victimizations to the police. For the most serious victimizations, the respective figures are 75% and 71%. Thus, among those morphological propositions tested, only that relating to greater reporting by married than single persons received support.

Culture

The third dimension discussed by Black (1976:61) is culture:

Culture is the symbolic aspect of social life, including expressions of what is true, good, and beautiful. It thus includes ideas about the nature of reality, whether theoretical or practical, and whether supernatural, metaphysical, or empirical. . . . Culture includes aesthetic life of all sorts, the fine arts and the popular, such as poetry and painting, clothing and other decorative art, architecture, and even the culinary arts.

Like stratification, culture varies among societies and within societies among individuals. "An individual's culture depends upon how many ideas he has, what he wears, eats, makes, watches, and plays" (Black, 1976:64). As an indicator of the culture of individuals, Black uses education. Whether on the individual or societal level, "law varies directly with culture" (Black, 1976:63). That is, for example, "literate and educated people are more likely to bring lawsuits against others" (Black, 1976:64).

The left panel of Table 6 shows again that the seriousness of the victimization is closely related to reporting to the police. Regardless of an individual's educational level, more serious victimizations are more likely to be reported to the police. The victim's educational level (excluding those still in school), as Black's theory predicts, is directly related to reporting to the police. The overall strength of this relationship is, however, very weak. Collapsing across seriousness, the gamma for the relationship between individual educational level and reporting to the police is .109 and within seriousness rows gammas

Survey includes a survey of a national probability sample of business establishments it is possible to compare reporting rates according to whether the victim was an individual or an organization. In support of Black's hypothesis, the data indicate that although about one-half of the robberies of individuals are reported to the police, more than four out of five robberies of business establishments are reported to the police.

Black also conceives of organization as applying to individuals and to collections of individuals. Black considers two or more individuals, by definition, to be more organized than a single individual. As noted above, Black puts forth the proposition that "law is greater in a direction toward less organization" (Black, 1976:86). If victims of personal crimes are dichotomized into less organized (single individuals) and more organized (two or more individuals) and offenders are similarly dichotomized, Black makes an explicit prediction regarding the rank-order of the resultant four-fold classification with respect to invocation of law. Specifically, the most likely to report their victimizations to the police are two or more persons who are victimized by a lone individual, then two or more persons victimized by two or more offenders, then a lone victim of a lone offender, and finally the lone victim of two or more offenders (Black, 1976:97). The relevant data are presented in Table 7. With seriousness level controlled, the rank-order of cells does not consistently conform to predictions derived from Black's theory of law. This is because although there is a systematic "victim" effect along the organizational dimension, there is not a

parallel systematic "offender" effect along this dimension. In sum, there is evidence consistent with the theory that more organized victims are systematically more likely to invoke the law, but there is no consistent (or substantial) evidence that "the more organized the offender, the more of this immunity [from law] he enjoys" (Black, 1976:93). Once again, a comparatively strong seriousness effect is apparent.

Social Control

Black's (1976:107) final dimension is social control:

Social control is the normative aspect of social life. It defines and responds to deviant behavior, specifying what ought to be: what is right or wrong, what is a violation, obligation, abnormality, or disruption. Law is social control, but so are etiquette, custom, ethics, bureaucracy, and the treatment of mental illness.

As with the other dimensions relevant to the behavior of law, social control is a quantity that varies across societies, communities, organizations, families and friendships—a quantity with which law varies inversely (Black, 1976:107). In settings which permit people continuously to observe and react to each other's conduct, law is less important as a mechanism of social control. This proposition can be tested by examining variations in reporting victimizations to the police across rural, suburban, and urban areas. Much of Black's discussion implies that in rural areas, in which informal controls are traditionally viewed as stronger than in anonymous cities, rates of reporting to the police will be lower than those in urban

Table 7. Proportion of Victimizations Reported to the Police by Seriousness Level, Number of Victims, and Number of Offenders, United States, 1974–1976

Number of Offenders	Seriousness Level							
	1		2		3		4	
	Number of Victims One	Number of Victims More Than One	Number of Victims One	Number of Victims More Than One	Number of Victims One	Number of Victims More Than One	Number of Victims One	Number of Victims More Than One
One	34% (2,618,328)	55% (450,508)	36% (3,564,729)	53% (738,883)	44% (2,390,365)	66% (940,594)	71% (791,691)	86% (159,048)
More Than One	34% (989,576)	59% (360,232)	38% (1,556,805)	54% (593,099)	49% (1,003,481)	69% (672,093)	70% (693,466)	80% (294,856)

areas. When the victimization data are disaggregated according to the place of the victim's residence (data not shown in tabular form)—within the central city of an SMSA (urban), the balance of an SMSA (suburban), or outside an SMSA (rural)—there is virtually no relationship between urbanization and reporting to the police. For the least serious victimizations, the percentages of victims reporting to the police in urban, suburban, and rural areas are 36%, 40% and 40%. For the most serious victimizations the respective figures are 74%, 82% and 79%.

Social control is hypothesized not only to vary across macroareas but across microareas as well. Black (1976:110) maintains that private social settings have more social control (other than law) and, as a consequence, less law than do public settings. In connection with reporting crimes to the police, it follows from this premise that reporting should be greater for victimizations occurring in public

places ("on the street" and in public conveyances) than in homes or offices. The relevant data are presented in Table 8.

The most private of the places shown in Table 8 is the home and the least private is "on the street." These data are contrary to the prediction that where nonlegal social control is the greatest (the home), reporting to the police will be the least and, conversely, where nonlegal social control is the least (the street), reporting to the police will be the greatest. For each seriousness level rates of reporting to the police for victimizations occurring on the street were lower than those for victimizations occurring in the home. They were also lower than the rates for victimizations occurring "near the home," where social control would be expected to be greater because the crime occurred within the victim's own neighborhood (Black, 1976:109). As a place of occurrence, "office/factory" is, in Black's terms, subject to more nonlegal social control than

Table 8. Proportion of Victimization Reported to the Police, by Seriousness Level, Place of Occurrence, and Prior Relationship between Victim and Offender, United States, 1974-1976

Seriousness Level	Place of Occurrence							Total
	Own Home	Inside Commercial Building/Public Conveyance	Office/Factory	Near Home	On Street	Inside School	Other	
stranger	64% (109,687)	40% (563,677)	54% (20,931)	41% (203,340)	38% (1,579,663)	14% (292,063)	46% (241,930)	38% (3,011,291)
1 non-stranger	49% (350,178)	38% (180,818)	24% (31,665)	51% (143,252)	35% (553,573)	11% (223,076)	31% (284,418)	36% (1,740,979)
total	53% (459,865)	40% (744,494)	36% (52,596)	45% (346,592)	38% (2,133,236)	12% (525,139)	38% (490,398)	37% (4,752,270)
stranger	53% (251,568)	36% (1,182,976)	36% (74,458)	57% (425,562)	40% (2,446,669)	13% (260,978)	42% (426,690)	40% (5,068,901)
2 non-stranger	52% (509,410)	27% (277,995)	16% (102,491)	56% (2,953,348)	32% (536,816)	13% (205,508)	30% (260,771)	36% (2,188,340)
total	52% (760,979)	34% (1,460,972)	25% (176,949)	57% (720,910)	39% (2,983,485)	13% (466,486)	37% (687,461)	39% (7,257,241)
stranger	69% (254,764)	58% (520,362)	68% (28,683)	67% (362,835)	51% (2,002,965)	26% (96,996)	57% (417,622)	55% (3,684,226)
3 non-stranger	63% (427,788)	43% (187,233)	11% (23,314)	62% (269,687)	46% (470,283)	16% (98,012)	42% (260,562)	50% (1,736,875)
total	65% (682,552)	54% (707,595)	42% (51,997)	65% (632,518)	50% (2,473,248)	21% (195,008)	52% (678,184)	53% (5,421,101)
stranger	85% (224,342)	78% (217,423)	76% (11,474)	88% (107,126)	70% (964,752)	25% (8,997)	69% (130,691)	74% (1,664,805)
4 non-stranger	72% (176,050)	75% (30,678)	100% (1,217)	79% (43,696)	71% (103,593)	51% (7,497)	71% (68,011)	72% (430,742)
total	80% (400,391)	78% (248,101)	78% (12,691)	86% (150,823)	70% (1,068,345)	37% (16,994)	70% (198,702)	73% (2,095,548)

the street. Rates of reporting are higher (but not consistently) for crimes occurring on the street than for those occurring in offices and factories. Victimizations taking place "inside schools" have the lowest rates of reporting to the police, regardless of seriousness level. To the extent that the school is viewed as an institution having its own independent system of social controls, then these school data are supportive of Black's proposition.

Also shown in Table 8 are rates of reporting to the police disaggregated on the basis of prior relationship between the victim and the offender. This is useful for two reasons: first, because as place of occurrence varies so too does the proportion of incidents involving victims and offenders who were previously known to each other (e.g., victimizations occurring in the victim's home involve a disproportionate number of nonstranger victimizations); second, because Black suggests that increased social control in private settings derives both from the fact that persons interacting in private settings are likely to be friends and acquaintances (among whom on-going nonlegal mechanisms of social control exist) and that many restricted places (factories, offices, schools, etc.) have their own systems of security (Black, 1976:110). When the prior relationship between the victim and the offender is controlled, the overall findings noted above generally maintain. One exception is that stranger victimizations occurring in offices/factories have rates of reporting that are generally higher than those occurring between strangers on the street.

Black argues that law varies even with the time of day. "When people go to sleep, for instance, most social control relaxes as well and law increases" (1976:110). Consistent with this hypothesis is the finding that for victimizations of low seriousness reporting to the police increases from one-third for those victimizations occurring during the daytime to one-half for those occurring between midnight and six a.m. As seriousness increases, the strength of this relationship decreases, such that for the most serious victimizations there is little variation in reporting to the police by time of occur-

rence (daytime, 74%; 6 p.m. to midnight, 75%; midnight to six a.m., 72%). Thus, overall, the social control dimension receives only partial support.

Discussion

The Behavior of Law is an important contribution to the sociology of law both because of the empirical questions that it raises and because it is generally set forth in such an explicit manner that it is testable. Black predicts that law, which can be quantified in a variety of ways, is associated with several critical dimensions; Black predicts the direction of these associations, and the conditions under which these associations hold. Through the use of a great variety of concrete examples Black facilitates the research task by translating central concepts into indicators.

The ability of Black's theory to explain reporting to the police can be summarized briefly. According to the stratification postulates of Black's theory of law as they have been operationalized here, reporting to the police should have varied directly with the victim's rank, should have been greater for victimizations among wealthy nonstrangers than among less wealthy nonstrangers, should have been greater for victimizations between strangers than for victimizations between nonstrangers, and should have varied directly with areal income. With the exception of a slightly greater overall rate of reporting for stranger victimizations than for nonstranger victimizations, these stratification propositions were not supported.

The propositions relating to morphology lead to the expectation that law will be used increasingly as relational distance increases. In the context of reporting victimizations to the police, this implies that reporting will be greater for larger communities than for smaller communities and for more densely populated areas than for less densely populated areas. The proposition that law varies directly with integration implies that reporting to the police will be greater for employed persons than for unemployed persons and for married persons than for single persons. Of these four morphological expectations support

is found only for the hypothesis that married persons have a higher rate of reporting to the police than do single persons.

Following Black, educational level was used as the indicator of individual and neighborhood culture to test the proposition that law varies directly with culture. Although there is weak support for this proposition on the individual level, there is weak evidence contrary to the hypothesis on the areal level. At neither the individual level nor the areal level is the relationship between education and reporting to the police as substantial as required by Black's theory.

Black proposes that law varies directly with organization and hence the finding that business establishments have a higher rate of reporting to the police than do individuals is consistent with Black's organizational hypothesis. On the other hand, his theoretical predictions regarding variations in rates of reporting to the police according to whether the victim and the offender have greater or lesser organization are not consistently supported. The organization of the victim is associated with greater reporting to the police but, contrary to theoretical expectations, the organization of offenders does not reduce reporting to the police.

The proposition that law varies inversely with other forms of social control was operationalized by examining rates of reporting by extent of urbanization, time of occurrence, and place of occurrence. Rates of reporting were found to be homogeneous across levels of urbanization, but were found to vary somewhat across time and place of occurrence. Although the data relating to time of occurrence for victimizations of low seriousness are consistent with Black's theoretical predictions, those relating to extent of urbanization are not, and those relating to place of occurrence offer only partial support.

Most of the predictions of Black's theory of law are not compatible with these victimization survey data on the invocation of the criminal law. For a theory that purports that "... it is possible to explain all of [the behavior of law]" (Black, 1976:4), these results cannot be considered encouraging. On the other

hand, at the trivariate level, when the dimensions central to Black's theory of law are controlled, in every case there is evidence of a substantial seriousness effect. This is true when both characteristics of individuals (Tables 1, 2, 5, and 6) and characteristics of areas (Tables 3, 4, and 6) are controlled. Also, without exception, at the trivariate level the seriousness effect is greater—usually much greater—than the effects of the indicators central to Black's theory of law. In the few instances in which there is some support for Black's hypotheses, the strength of support decreases as seriousness increases.

The centrality of seriousness to the phenomenon of reporting to the police, particularly in conjunction with the relative weakness of the dimensions at the core of Black's theory of law, suggests that an adequate theory of criminal law must incorporate some measure of the consequences of legal infractions to individuals in order to be an accurate model. It is, of course, conceivable that the relation between variability in conduct and variability in the behavior of law is confined to reporting of victimizations to the police and is not of importance to the quantity of criminal law in other spheres. However, research concerning arrest (Hindelang, 1974; Hagan, 1972; Goldman, 1963), prosecution (Hagan, 1974) and sentencing (Green, 1964; Hagan, 1974; Chiricos and Waldo, 1975) indicates that the gravity of the infraction against legal norms is a major determinant of the quantity of criminal law in general.

To be consistent with the available data, an adequate theory of the behavior of criminal law must incorporate a proposition stating that the quantity of criminal law varies directly with the seriousness of the infraction. That is, the gravity of the infraction against legal norms is a major determinant of how individuals and legal systems react to the infraction. Such a proposition, however, is explicitly ruled out of Black's theory by his stance that the behavior of law can be explained "... without regard to the ... conduct of the deviant" (Black, 1976:118). By excluding individual conduct from his theory, Black has excluded what our data

(and the data of others cited above) have shown to be an extremely important determinant of the quantity of criminal law.

Unlike Black's definition of seriousness (cited above), seriousness as we have conceptualized and operationalized it can be defined independently of the quantity of law. The available research data support the notion that within societies there is general consensus regarding the rank order of common-law infractions by seriousness (Rossi et al., 1974). Specifically, it has been found that such rankings are generally consistent (i.e., correlations on the order of .9) across social class, education, race, sex, and age (Rossi et al., 1974). Furthermore, replications of the Sellin-Wolfgang seriousness scale in Canada (Akman et al., 1967), in Puerto Rico (Velez-Diaz and Magargee, 1971), and in England, Taiwan, Brazil, and Mexico (Pease et al., 1975) show a general cross-cultural consensus as well. These studies suggest that within and across societies there is general agreement on elements of many criminal infractions that make them more or less serious.⁹ The data indicate that variation in these elements of seriousness substantially affects variation in the quantity of law and cannot be ignored if the theory is to model the behavior of the criminal law.¹⁰

REFERENCES

- Akman, D., A. Normandeau, and S. Turner
1967 "The measurement of delinquency in Canada." *Journal of Criminal Law, Criminology, and Police Science* 58:330-7.
- Black, D.
1976 *The Behavior of Law*. New York: Academic Press.
- Chiricos, T., and G. Waldo
1975 "Socioeconomic status and criminal sentencing: an empirical assessment of a conflict proposition." *American Sociological Review* 40:753-72.
- Goldman, N.
1963 *The Differential Selection of Juvenile Offenders for Court Appearance*. New York: National Council on Crime and Delinquency.
- Green, E.
1970 "Race, social status, and criminal arrest." *American Sociological Review* 35:476-90.
- Hagan, J.
1972 "The labelling perspective, the delinquent, and the police: a review of the literature." *Canadian Journal of Criminology and Corrections* 14:150-65.
1974 "Extra-legal attributes and criminal sentencing: an assessment of a sociological viewpoint." *Law and Society Review* 8:357-83.
- Hindelang, M.
1974 "Decisions of shoplifting victims to invoke the criminal justice process." *Social Problems* 21:580-93.
1976 *Criminal Victimization in Eight American Cities*. Cambridge, Ma.: Ballinger.
- Hindelang, M. and M. Gottfredson
1976 "The victim's decision not to invoke the criminal justice process." Pp. 57-78 in W. McDonald (ed.), *Criminal Justice and the Victim*. Beverly Hills: Sage.
- Hindelang, M., M. Gottfredson and J. Garofalo
1978 *Victims of Personal Crimes: An Empirical Foundation for a Theory of Personal Victimization*. Cambridge, Ma.: Ballinger Press.
- Law Enforcement Assistance Administration, U.S. Department of Justice, National Institute of Law Enforcement and Criminal Justice, Statistics Division
1972 *San Jose Methods Test of Known Crime Victims*. Washington, D.C.: U.S. Government Printing Office.
- Michaels, P.
1978 "Review of Black's *The Behavior of Law*." *Contemporary Sociology* 7:10-1.
- Nader, L.
n.d. Prepublication review of *The Behavior of Law*, quoted on its dust cover.
- Newman, G.
1976 *Comparative Deviance*. New York: Elsevier.
- Pease, K., J. Ireson and J. Thorpe
1975 "Modified crime indices for eight countries." *Journal of Criminal Law and Criminology* 66:209-14.
- Pope, C.
1975a *The Judicial Processing of Assault and Burglary Offenders in Selected California Counties*. Washington, D.C.: U.S. Department of Justice.
1975b *Sentencing of California Felony Offenders*. Washington, D.C.: U.S. Department of Justice.
- Reiss, A.
1971 *The Police and the Public*. New Haven: Yale University Press.
- Rossi, P., E. Waite, C. Base, and R. Berk
1974 "The seriousness of crime: normative structure and individual differences." *American Sociological Review* 39:224-37.

⁹ See also Newman's (1976) analysis of data from India, Indonesia, Iran, Italy, Yugoslavia, and the United States.

¹⁰ Although it seems as though seriousness also would be predictive of invocation of the law in some other spheres as well (e.g., civil), we have limited our discussion of the behavior of law to the *criminal* law. Thus, Black's theory is much more general (in applying to all of law) and we do not maintain that our seriousness model would work as well—or Black's theory as poorly—if tested in contexts outside of the criminal law.

- Sellin, T. and M. Wolfgang
1964 *The Measurement of Delinquency*. New York: Wiley.
- Sherman, L.
1978 Review of *The Behavior of Law*. *Contemporary Sociology* 7:11-5.
- U.S. Bureau of the Census
1975 *National Crime Survey: National Sample Survey Documentation*. U.S. Department of Commerce.
- Velez-Diaz, A. and E. Magargee
1971 "An investigation of differences in value judgments between youthful offenders and nonoffenders in Puerto Rico." *Journal of Criminal Law, Criminology, and Police Science* 61:549-53.

COMMON SENSE IN THE SOCIOLOGY OF LAW*

DONALD BLACK

*Yale University**American Sociological Review* 1979, Vol. 44 (February):18-27

The effort by Gottfredson and Hindelang (1979) to test some of the theory in *The Behavior of Law* (Black, 1976) is worthy of comment, since it illustrates how sociologists can be misled by common sense. First, because they employ data from surveys of "criminal victimization," conduct not considered "crime" by the respondents was lost from view, making a test of the theory impossible. Second, because they attempt to explain law with the "seriousness" of crime, they mistake an evaluation for a description, thereby offering as a solution what is in fact a problem in the sociology of law. The weaknesses in Gottfredson and Hindelang's work may be found in the study of law more generally, and also in the study of other phenomena in sociology.

Common sense is the style of discourse by which people understand reality in everyday life. It is a guide to practical action, and is radically different from science in its pure form (see Schutz, 1953; Garfinkel, 1960; Geertz, 1975). One difference is that, unlike science, common sense does not distinguish sharply between facts and values.¹ Instead, evaluations of reality appear in a rhetoric of description, so that statements about what is or is not desirable are presented as if they were statements about what is simply the

case. A seemingly descriptive word such as "art," for example, actually means in common sense that something is worthy of aesthetic appreciation, just as "illness" refers to something that is worthy of medical attention. Similarly, the taste of one kind of food or drink is said to be "better" than another kind, as if this were a matter of fact, something about the food or drink rather than about the person who consumes it. Whatever the topic may be—the weather, a suit of clothes, or a person—an evaluation in common sense tends to sound like a description.

Partly because of this, common sense may enter unnoticed into the discourse of science. The "facts" may then contain hidden meanings, and scientists may unwittingly report as findings or even promote as theory what is actually common sense itself. Since it is a study of human behavior, sociology may be especially vulnerable to problems of this kind. In any case, if only because it is a science, sociology in its pure form involves an understanding of reality which is different from that of common sense. Consider the sociology of law.

In common sense, law is, among other things, a way of achieving order and jus-

* Address all communications to: Donald Black; Dept. of Sociology; Yale University; New Haven, CT. 06520.

I thank M.P. Baumgartner for criticizing an earlier draft.

¹ Other characteristics of common sense are discussed by Geertz (1975). For example, practitioners of common sense are less skeptical than scientists. The nature of reality is taken for granted: it is "of course" the case, what "everyone knows," what is "obvious" to anyone with "ordinary intelligence." Unlike science, then, common sense requires no expertise. Without special preparation or effort, anyone can and should have a good deal of common sense. For that matter, people in everyday life do not even recognize common sense to be a body of ideas, but take it to be a product directly derived from experience, an expression of reality itself.

tice. It proceeds through the interpretation and application of rules, case by case, within the legal process, and its primary concern is conduct. Thus, in the common sense of criminal law, the conduct known as "crime" explains why people call the police, and it also explains arrest, prosecution, conviction, and punishment. It is understood, furthermore, that the more "serious" the crime is, the more likely is each of these actions. By contrast, the sociology of law in its pure form understands law as a quantitative variable, and every increase of governmental social control—by a call to the police, an arrest, a conviction, etc.—is taken as an increase in this quantity (see Black, 1976:2–3). A major aim is then to predict and explain variation in the quantity of law with its location and direction in social space, defined by the characteristics of the people involved, their relationships with each other, and the larger social context in which they interact.² It should be noted that from this standpoint the nature of "crime" and its "seriousness" are expressions of law itself, since law defines the conduct to be known as "crime" and the degree to which it is to be handled as "serious." In this respect as well as others, the sociology of law departs considerably from the common sense of law, that is, from the discourse of lawyers, judges, policemen, citizens, or anyone else who relates to law as a practical affair. It is therefore worthy of comment that two sociologists, Michael R. Gottfredson and Michael J. Hindelang, have written a paper arguing that "crime" itself explains why people call the police, and that, in particular, the "seriousness" of crime is the most important factor in the likelihood of these calls (1979). The publication of the paper in a leading journal indicates that common sense is not yet fully recognized as such in the sociology

of law or, for that matter, in sociology at large. Because it has this broader significance, then, a closer examination of the paper is warranted.

A STUDY IN COMMON SENSE

Using interviews collected in several surveys of "criminal victimization" in the United States, Gottfredson and Hindelang have sought to discover differences across the population in the likelihood of calls to the police. More specifically, they have sought to determine whether there are differences in calls to the police as predicted by some of the theory in *The Behavior of Law* (Black, 1976, hereafter, "the theory of law"). The theory predicts, for example, that—all else constant—a wealthier person is more likely to call the police than a poor one, an employed or married person more likely than an unemployed or single one, an organization more likely than an individual, or the victim of a stranger more likely than the victim of an intimate. Gottfredson and Hindelang report, however, that differences of this kind generally do not predict who calls the police. Instead, they find that the "seriousness" of the "crime" is what makes the difference: "... the seriousness effect is greater—usually much greater—than the effects of indicators central to Black's theory of law" (p. 16). Leaving aside matters of a strictly technical nature—such as how they measure variables and their effects—the following discussion focuses upon two problems at a deeper and more fundamental level of Gottfredson and Hindelang's study. First, because the incidents labelled as "crimes" for purposes of their study were selected by the respondents, variation in the labelling process itself was completely obscured, making it impossible to test the theory of law with their data. Second, when they attempt to explain calls to the police with the "seriousness" of crime, they mistake a variable that requires explanation for one that provides it. In the first case Gottfredson and Hindelang fall prey to the common sense of the respondents, in the second to their own common sense.

² It should be added that variation in the quantity of law is only one among a number of problems addressed by the sociology of law. For instance, there is also variation in the form and style in which law presents itself. The quantity of law is the focus of the present discussion, however, since it bears most directly upon the issues treated in the following pages.

The Nature of Crime

A risk of any study involving interviews is that the meaning of the questions or answers may not be clear, and the findings produced may therefore not be what they seem. For this reason, the questions should be as concrete as possible, requiring a minimum of interpretation, and they should be designed to elicit equally concrete answers. Thus, in a survey about criminal or other legal matters, the questions and answers should pertain to simple matters of fact, since the meaning of legal terminology is by its nature ambiguous and applicable to a variety of facts. The concept of "crime" itself is inherently vague, for example, and different people may apply it in different ways. What is a "crime" to one person may not be to another, and, for a given person, whether an incident is a "crime" may depend upon the conditions under which it occurs. This is because, in common sense, what is a "crime" is not merely a matter of fact; it is also an evaluation. It is a code word that implies how an incident should be handled along with, to some degree, what the incident is. In particular, in the discourse of everyday life, a "crime" is an incident worthy of police attention.³ Hence, the concept of "crime" does not describe the universe of incidents people experience in their everyday lives, but only the ones they consider worthy of police attention. The same applies to related terms of art in legal discourse, such as "theft," "robbery," "assault," or "rape."⁴

³ The phrase "worthy of police attention" is used here for the sake of simplicity, but it should be understood that, in common sense, a "crime" is worthy of other legal attention as well, such as prosecution and adjudication. It is, moreover, an incident worthy of legal attention in the penal style, which involves, among other things, the definition of a person as an offender who has violated a prohibition and who deserves punishment in the name of the state. This contrasts with other styles of social control such as compensation and therapy (see Black, 1976:4-6). Finally, it should be realized that simply because a person considers an incident worthy of police attention does not mean the police will actually be called.

⁴ The same applies to legal discourse in general, civil as well as criminal, and procedural as well as substantive. When lawyers, judges, or law professors talk or write about legal matters, they generally make them sound as if they were all matters of fact. Some know what the law "is," they suggest, while

The survey data analyzed by Gottfredson and Hindelang were spoiled for their purposes by this confusion about the nature of "crime." Because the respondents were asked only to report incidents they considered to be "crimes," incidents not labelled as such were never mentioned or collected in the interviews. As a result, the data can tell us only about the incidents considered worthy of police attention and nothing about the others, making a comparison impossible. This means that the predictions about calls to the police implied in the theory of law cannot be tested with these data.⁵ Perhaps a few examples from the interview itself will show how the data were spoiled.⁶ On the first page of the interview schedule, at the top, is the title of the project: "National Crime Survey." Since this title presumably was given when each interview was arranged, from the beginning anyone in touch with everyday language could understand the aim of the study: to survey incidents worthy of police attention. Beyond this, the core of the interview began with the following introduction: "Now I'd like to ask some questions about crime." Next came a series of screen questions pertaining to whether the respondent had been the victim of various kinds of "crime." These questions ask, for instance, whether the respondent had been the victim of a "stickup" or "mugging," and the concepts "rob" and "steal" appear as well. After these specific questions, the respondent was asked whether anything else had happened that he or she "thought was a crime." Finally, for each "crime" mentioned, a detailed "crime incident report" was filled out,

others do not. They discuss what "is" constitutional, for example, or what "is" negligence, fraud, a contract, a search, or whatever. And yet all of this is greatly concerned with matters of value, of what ought to be the case, of who ought to be allowed to do this or that.

⁵ This is not to say that the data are inappropriate for the purpose for which they were gathered in the first place—government surveys of "criminal victimization," in other words, the "crime problem." In fact, "crime" in its everyday meaning would seem to be exactly what such surveys are intended to examine.

⁶ A copy of the interview schedule is reproduced in Garofalo and Hindelang (1977: Appendix A).

and it also implied that the matter at hand was police business. Surely we may infer that the respondents did not report incidents they considered to be, as a practical matter, different from "crimes."

What people consider to be "crime" varies with its location and direction in social space. Any given person will describe some conduct as "crime"—or "robbery," "theft," "rape," etc.—but this will depend upon such factors as the social status of the people involved as "offender" and "victim," the nature of the relationship between them, and the larger context in which the incident occurs. Thus, what is an "assault" or "theft" in one setting is only "teaching someone a lesson" or "borrowing without asking permission" in another setting. Acts committed by higher-status people against those of lower status, for example, or by organizations against individuals, or between intimates, are less likely to be defined as "crimes." Accordingly, a parent who strikes or beats a son or daughter has not committed what is generally defined as an "assault," nor has a man who strikes or beats his wife or girlfriend. Likewise, a man who forces sexual relations upon his wife or girlfriend is generally not considered a "rapist," and if he absconds with her welfare check or automobile he is not a "thief." All of this is common sense (see Sudnow, 1965).

The theory of law predicts and explains common sense of this kind, showing how the label of "crime"—or "assault" or "rape" or "theft"—is distributed in social space. But it is precisely this variation in labelling that is obscured in the data employed by Gottfredson and Hindelang. Their study therefore shows only what the labels predict, not what predicts the labels. It shows only whether people called the police when they considered an incident worthy of police attention, not whether some incidents were more or less likely to be considered worthy of this attention in the first place.

Gottfredson and Hindelang indicate in a footnote that they had some awareness of this problem, since they cite evidence that "... nonstranger victimizations are disproportionately undercounted by the survey" and that "this bias probably works

against Black's hypothesis [about the effect of intimacy on the labelling of crime]" (fn. 5). Nevertheless, they apparently did not recognize the broader implications of this for the validity of their study.⁷ It should be noted, moreover, that this "bias" in Gottfredson and Hindelang's data is predictable from the theory they attempted to test with the data (Black, 1976:41, 47). The theory of law also predicts a number of other "biases" in their data, such as a tendency to omit incidents with lower-status victims, including poor people, blacks, juveniles, and individuals (rather than organizations). Wherever the theory of law predicts the quantity of law to be the least, in fact, it also predicts that the "victimization survey" will collect the

⁷ The evidence that "crimes" between intimates were "underreported" is that people who had actually called the police about such matters often failed to report to interviewers that the incidents had ever occurred at all. This was learned through "reverse record checks," whereby incidents found in police records were traced back to the people involved in order to determine whether they would be reported to an interviewer. In studies of this kind, it was found that only about 70% of the victims known to the police reported their "victimizations" to the interviewers. This varied with the nature of the incident, so that, for example, 90% of the known "burglaries" were reported, but fewer than half of the known "assaults" (for an overview of these studies, see Garofalo and Hindelang, 1977:12-4).

These findings may reflect the fact that people sometimes call the police even though they do not consider the matter a "crime." In cases of violence between a husband and wife, for instance, often the victim simply wants the police to settle a dispute or wants nothing more than to be taken to a hospital (see, e.g., Parnas, 1967). When asked by an interviewer about "crimes" they have experienced, then, such people would not report these cases. Underreporting of this kind should be even greater for cases that were never reported to the police in the first place.

Regardless of the vocabulary used, however, it is unlikely that any survey based upon interviews would be able to elicit an unbiased picture of the past, especially in matters of human conflict. In a study of conflict in another society, for example, it was found that in interviews people were less likely to remember and report incidents that were handled privately, and also those that were not handled at all. This was discovered by comparing the reported cases—called "memory cases" by the investigator—with those which the investigator directly observed while living among the people (Koch, 1974: 23-4). Data based upon direct and unobtrusive observation would therefore appear to be the most reliable way to test the theory of law or any other theory of social control.

fewest cases. And this is entirely independent of the conduct that actually occurred.

This error in Gottfredson and Hindelang's study—allowing the common sense of the respondents to define "crime"—is essentially the same as the well-known error of using official statistics about "crime" to measure actual conduct, since these data are products of common sense as well. We know, for example, that the police are less likely to record an incident as a "crime" if it occurs between people in an intimate relationship (Black, 1970:740-1). In the view of the police, a typical case of violence between a husband and wife is "not really a crime" but only a "family dispute" (see Parnas, 1967), and what might otherwise be called a "theft" is only a "civil matter" when it occurs between people related by blood or marriage. There is also evidence that the police are less likely to record as a "crime" an incident involving people of low status (see, e.g., Black, 1970:745-6). Similar processes of selection—according to the same principles—occur at other stages of the criminal process, such as in the charging and prosecuting of offenses against persons accused of crimes, and, in fact, wherever else cases of any kind are labelled according to legal criteria. If we are to learn how these labels are applied, then, we must examine all of the cases involving the same conduct, regardless of how they have been classified by people in everyday life. Although sociologists have long been skeptical of crime statistics provided by the police, they do not appear to be sufficiently skeptical of crime and other statistics provided by ordinary citizens.

The Seriousness of Crime

Gottfredson and Hindelang report little evidence supporting the theory of law, but they do find one major correlation: calls to the police vary directly with the "seriousness" of crime. They argue that the relevance of this finding extends beyond calls to the police to every stage of the criminal process, and accordingly they offer the following proposition: "The quantity of criminal law varies directly with the seriousness of infractions" (p. 6). In this part

of their work Gottfredson and Hindelang have not merely recorded the common sense of their respondents; here they have promoted common sense as sociological theory.

To explain the response to crime with its "seriousness" is much the same as explaining the response to art with its "beauty" or the response to an idea with its "truth." It is to confuse the participant's perspective with the observer's perspective, and even to confuse the thing to be explained with that which explains it. The "seriousness" of crime is an evaluation, not a fact, and so it cannot be measured without a standard of value. Like the concept of crime itself, it is a justification for law, not an explanation. Despite all of this, the effort to explain variation in law with the "seriousness" of crime continues as an established practice in the sociology of law.⁸ Gottfredson and Hindelang's work thus provides an opportunity to examine an error that is common to the field. Their work also provides an example of the error in a particularly sophisticated form.

Gottfredson and Hindelang do not themselves judge the "seriousness" of crime, nor do they invoke the hierarchy of crimes specified in the written law or implied in the law in action. Instead they employ what they call a "seriousness scale." This scale was developed earlier by Thorsten Sellin and Marvin E. Wolfgang (1964: especially chap. 15 and 16), and was originally intended to define the degree of "harm" entailed in various kinds of conduct, such as the violent and predatory conduct often labelled as "assault," "rape," "robbery," etc. The scale allows comparisons of the "seriousness"

⁸ For instance, the "seriousness" of the crime is commonly understood as a factor in the severity of sentences in criminal courts. In fact, this is taken for granted in the design of many studies. Thus, in one recent investigation, "seriousness of offense" is called a "significant variable" and is therefore held constant while other variables are examined (Chiricos and Waldo, 1975:759; for a review of studies that follow a similar strategy, see Hagan, 1974). The "seriousness" of conduct is also seen as important in juvenile dispositions (e.g., Terry, 1967; Cohen and Kluegel, 1978). Among other places, this idea can even be found in the present author's earlier studies of the police (e.g., Black, 1970; 1971).

of crime from one offender to another, or from one community or neighborhood to another, without reference to the actual response of legal agencies. Sellin and Wolfgang based their scale upon the attitudes of respondents who answered a "seriousness questionnaire." The questionnaire contained a number of hypothetical incidents, and was introduced as follows: "This booklet describes a series of violations of the law; each violation is different. Your task is to show how serious you think each violation is . . ." (Sellin and Wolfgang, 1964:254, italics omitted). For respondents, they selected police officers, juvenile bureau officers, juvenile court judges, and university students—people that Sellin and Wolfgang felt would be especially likely to subscribe to the "middle-class value system" (1964:249). This was viewed as the appropriate basis for their seriousness scale, since "... the definition of crime and the administration of criminal justice are institutionalized expressions of the normative structure of the dominant middle class in American society" (1964:250). From the beginning, then, Sellin and Wolfgang were perfectly aware of the subjective character of judgments about the "seriousness" of crime. They simply wanted to measure objectively the judgments themselves, and to rank the "seriousness" of each kind of conduct accordingly (see Sellin and Wolfgang, 1964:237).

It should be noted, however, that the questionnaire on which Sellin and Wolfgang based their seriousness scale does not rank the "seriousness" of conduct alone, but of conduct occurring under particular social conditions. Although this may have been unintentional, it is understandable, since the respondents could not have judged each hypothetical incident without visualizing who was involved as the offender and the victim in each case. Hence, these conditions were supplied in the questionnaire itself. For instance, the hypothetical incidents generally suggested that the offender was a stranger to the victim. Thus, one incident was presented as follows: "The offender drags a woman into an alley, tears her clothes, but flees before she is physically harmed or sexually attacked" (Sellin

and Wolfgang, 1964: Appendix D). Here the respondent could easily surmise that this was meant to describe a woman's encounter with a stranger, not, let us say, her husband or boyfriend. The same applies to a description such as this: "The offender robs a victim of \$1,000 at gunpoint." For that matter, even the use of concepts such as "rape," "rob," and "steal" in the descriptions indicated to the respondents that the conduct occurred under conditions typically associated with these labels. These conditions necessarily entered into the seriousness scale itself, since it was based upon the results of the seriousness questionnaire. The degree of "seriousness" assigned to "forcible sex intercourse," for instance, was based upon the respondents' evaluations of that event when visualized between strangers, and the same applies to the other elements of crimes to which scores are assigned in the seriousness scale (whether the victim was injured, whether a weapon was used, etc.). Social conditions are always involved in any evaluation of "seriousness," and they will enter implicitly and unconsciously if they are not made explicit from the beginning. Thus, for example, a violent act within a family or between friends will not be evaluated in the same way as a violent act between strangers. It will generally be seen as less "serious." Even intentional homicide loses some of its "seriousness" when it occurs under the right conditions (see Rossi et al., 1974:228–9). For that matter, during a war or revolution, homicide loses its criminality altogether and becomes praiseworthy. In short, nothing is "serious" under all conditions.¹⁰

⁹ This is not merely speculation. A number of years after Sellin and Wolfgang's work, Rossi et al. (1974) administered a "seriousness" survey that systematically varied the offender-victim relationship in some of the hypothetical incidents, and they found that the "seriousness" rankings by the respondents varied accordingly. For example, "forcible rape of a stranger in a park" was ranked 13th among 140 hypothetical incidents, whereas "forcible rape of a former spouse" was ranked only 62nd. Similarly, "beating up a stranger" was ranked 64th, whereas "beating up an acquaintance" was ranked only 112th (Rossi et al., 1974:228–9).

¹⁰ Besides homicide, another kind of conduct often thought to be criminal—or at least highly

None of this is to deny that under the conditions implied in their questionnaire, Sellin and Wolfgang's seriousness scale is entirely objective. It objectively portrays the subjectivity of their respondents. Moreover, although it is based upon evaluations of conduct under particular conditions, the seriousness scale assigns "seriousness scores" only to elements of the incidents themselves, and so it is possible to apply the scale to any concrete case, regardless of the characteristics of the people involved.¹¹ The use of a weapon or an injury to the victim increases the seriousness score of any incident, for example, regardless of whether the offender is a stranger to the victim, a

member of the victim's family, a friend, or whatever. Gottfredson and Hindelang were therefore able to apply the scale to all of the incidents in their sample.

The seriousness scale tells us what people in everyday life consider to be more or less worthy of police attention. Just as "crime" is, in effect, a codeword for an incident that is worthy of police attention, so is each kind of crime, such as "rape," "robbery," or "theft." And some crimes are evaluated as more worthy of this attention than others: they are more "serious." Since this is what "seriousness" means, it is not surprising that, as Gottfredson and Hindelang found, incidents ranked higher on the seriousness scale are more likely to result in calls to the police.¹²

It appears, however, that Gottfredson and Hindelang have mistaken the objective character of the seriousness scale for the objective character of "seriousness" itself, as if "seriousness" were a fact about crime rather than a judgment about it. In other words, they seem to have mistaken an evaluation for a description of conduct. They even criticize the theory of law because it does not contain any statements about the "objective seriousness" of crime: "One of the major difficulties facing those who would test Black's theory of law is that he is not explicit about how the objective seriousness of the offense should be handled" (p. 4). They do not seem to realize that no questionnaire,

deviant—under all conditions and in all societies, is "incest." However, this label applies only to sexual conduct under particular social conditions, such as between a father and daughter or a mother and son, whereas under other conditions it is not subject to punishment of any kind. The particular sexual relationships that are defined as "incestuous" also vary from society to society.

Social conditions explain not only what is a "crime" or what is "deviant" in some other sense, but also what is "law" or other "social control." Thus, homicide is a "crime" under some conditions and "punishment" under others. (It may also be neither.) The same applies to beatings and other kinds of violence, the seizure of property, intrusions, humiliations, and so on. Whether conduct is "deviant" or whether it is "social control" should never be taken for granted, but should always be viewed as a problem for investigation.

¹¹ The scale is presented in Sellin and Wolfgang (1964:298) as follows:

ELEMENT	SCORE VALUE
Minor injury to victim	1
Victim treated and discharged	4
Victim hospitalized	7
Victim killed	26
Victim of forcible sex intercourse	10
Intimidated by weapon, add	2
Intimidation of persons in connection with theft, etc. (other than in connection with forcible sex acts):	
Physical or verbal only	2
By weapon	4
Forcible entry of premises	1
Value of property stolen and/or damaged:	
Under 10 dollars	1
10-250	2
251-2,000	3
2,001-9,000	4
9,001-30,000	5
30,001-80,000	6
Over 80,000	7
Theft of motor vehicle (recovered, undamaged)	2

¹² Gottfredson and Hindelang's study thus indicates that the elements in the seriousness scale are relevant to the range of incidents in their sample, i.e., incidents considered "crimes" by people in everyday life. It should be remembered, however, that an unknown number of incidents containing elements in the scale are not considered "crimes" by the people involved. This applies, for instance, to a great deal of violence in the family (see, e.g., Gelles, 1972: chap. 2). Indeed, many wives who are beaten or otherwise injured by their husbands believe that they deserve it (see, e.g., Parnas, 1967:952; Gelles, 1972:58-60). The present author's own research in progress also indicates that violence—even when it involves a weapon or physical injury—is not an important factor in the way the police handle conflicts between people in on-going relationships. Be all of this as it may, it is surely the case that, under given conditions, conduct such as violence is relevant to the behavior of law. The question is how this is to be understood in a theoretical framework (see below, p. 25, especially footnote 14).

scale, or other method can ever specify empirically what is or is not a "serious" crime. No matter how much people may agree about it,¹³ the "seriousness" of crime is a question of value, not fact, a response to crime, not a characteristic of crime itself. Accordingly, Gottfredson and Hindelang's effort to explain the response to crime with its "seriousness" reduces to an explanation of one response to crime by reference to another. But they make no effort at all to explain why people respond to anything as more or less "serious" in the first place, that is, to explain "seriousness" itself. In this sense, they appear to have mistaken the problem for the solution.

The theory of law specifies some of the conditions under which people respond to conduct as more or less "serious." Nevertheless, more work is needed on the problem of conduct itself. Even if the "seriousness" of conduct depends upon the social conditions under which it occurs, the fact remains that, under given conditions, some conduct is handled as more "serious" than other conduct. In a family, for instance, some acts of violence are handled as more "serious" than others, even if these evaluations are reversed under other conditions, such as during a war. Simply to designate conduct of this kind as more "serious" does not explain anything, however, but only begs the question of why it is handled as more "serious." Before this problem can be solved, it is likely that conduct itself will have to be understood in an entirely different way.¹⁴ At present, the relevance

of conduct is little more than common sense.

CONCLUSION

That crime and its seriousness may be explained with a theory of law is a departure from common sense. It is common sense that the very opposite is true, that law may be explained with crime and its seriousness, and with related conditions such as disorder, disruption, and disintegration. It is also common sense that rules of law ultimately decide cases in court, and that the winner is the party with the better case. But ideas of this kind are evaluative as well as factual, and have no place in the sociology of law. This is not to say that the problem of common sense is unique to the study of law. On the contrary, sociology is full of formulations that incorporate common sense. Consider, as further examples, the sociology of medicine, science, and art.

In the sociology of medicine, "health" and "illness" are generally understood in much the same way as they are understood by physicians, and so is the practice of medicine itself. Thus, "illness" is taken to be a need for care and treatment, as if this "need" were self-evident, a description rather than an evaluation (see, e.g., Mechanic, 1968; Jaco, 1972). What is more, this obscures variation in how people define and respond to "illness" (but see Freidson, 1970). Another strategy, by contrast, is to understand medicine as a quantitative variable,

¹³ A number of studies have found that people across the population and across societies generally rank the "seriousness" of hypothetical incidents in much the same order (see Gottfredson and Hindelang's references on p. 17). This does not necessarily mean, however, that these people would respond in the same way if they were the victims of incidents such as those described in the questionnaire, or even if they were merely present when such incidents occurred.

¹⁴ One possibility is to understand conduct as itself a location in social space that is subject to more or less law. For example, the conduct known as "vagrancy" may be understood as a place on the margin of social life, a location in "radial space" that is especially vulnerable to law directed from the center of social life, or "centrifugal law" (Black, 1976:49-53). Just as an unemployed and homeless man is

subject to more law—compared with an integrated man—if he is, say, drunk or violent, so are unemployment and homelessness subject to more law in their own right, apart from any other conduct. Similarly, "suicide," "desertion," and other forms of social withdrawal may be understood as movements away from the center of social life, vulnerable to law for that reason alone (Black, 1976:52-3). And "heresy" may be understood as a location in cultural space, vulnerable to law according to the same principle that explains why a drunk or violent person who is a member of an ethnic subculture is likely to receive more law than an equally drunk or violent person who is more conventional (Black, 1976:69-73). Without considerably more work, however, it is impossible to know how many facts this strategy will order, and in any case our map of social space will probably need more detail—even more dimensions—before much progress can be made.

measurable by the degree to which a particular condition is defined as worthy of medical attention, and by how much care and treatment it receives (see Black, 1978: 12-3). Just as the theory of law predicts and explains crime and its seriousness, then, it is possible to have a theory of medicine that predicts and explains illness and its seriousness. Until the sociology of medicine abandons the common sense of medicine, however, it can be little more than a branch of the medical profession.

Sociologists of science and art also have yet to escape the common sense of the people they study. Accordingly, in the sociology of science, "truth" and "knowledge" are taken as characteristics of ideas rather than evaluations of ideas. Although it is impossible to measure objectively the quality of an idea, sociologists continue to try, not realizing that all they can do is endorse the evaluations of one or another faction of science. Citations in the scientific literature are used as a measure of the quality of work, for example, and even to explain the success of scientists in their careers (e.g., Cole and Cole, 1973). An alternative is to understand an idea as itself a quantitative variable, its magnitude measurable by how people define and respond to it, whether by citations or other forms of recognition (see Black, 1978:15-6). It then becomes possible to have theory that predicts and explains who is defined as knowledgeable or ignorant, intelligent, stupid, or whatever. Similarly, sociologists of art could have theory that would predict and explain what is taken as "art." They could understand art as a quantitative variable, measured by the degree to which a creation is appreciated as beautiful or otherwise aesthetically important (see Black, 1978:19-20). Is it displayed in a museum or praised by critics? How much money is paid for it? Is it studied in universities? But sociologists have not tried to measure art as a variable. Instead they have participated in art criticism itself, as if beauty were a matter of fact (e.g., Shils, 1960; Jaeger and Selznick, 1964).

In sum, common sense in sociology results in a confusion of fact and value, so that evaluations appear as descriptions,

and justifications as explanations. It is possible, however, to transcend the discourse of everyday life, and to be scientific instead of practical. At its best, sociology has no common sense at all.

REFERENCES

- Black, Donald
 1970 "Production of crime rates." *American Sociological Review* 35:733-48.
 1971 "The social organization of arrest." *Stanford Law Review* 23:1087-111.
 1976 *The Behavior of Law*. New York: Academic Press.
 1978 "A strategy of pure sociology." Paper presented at the annual meeting of the American Sociological Association, San Francisco.
- Chiricos, Theodore G., and Gordon P. Waldo
 1975 "Socioeconomic status and criminal sentencing: an empirical assessment of a conflict proposition." *American Sociological Review* 40:753-72.
- Cohen, Lawrence E., and James R. Kluegel
 1978 "Determinants of juvenile court dispositions: ascriptive and achieved factors in two metropolitan courts." *American Sociological Review* 43:162-76.
- Cole, Jonathan R., and Stephen Cole
 1973 *Social Stratification in Science*. Chicago: University of Chicago Press.
- Freidson, Eliot
 1970 *Profession of Medicine: A Study of the Sociology of Applied Knowledge*. New York: Harper and Row.
- Garfinkel, Harold
 [1960] "The rational properties of scientific and common sense activities." Pp. 262-83 in *Studies in Ethnomethodology*. Englewood Cliffs: Prentice-Hall.
- Garofalo, James, and Michael J. Hindelang
 1977 *An Introduction to the National Crime Survey*. Washington, D.C.: U.S. Department of Justice, Law Enforcement Assistance Administration, National Criminal Justice Information and Statistics Service.
- Geertz, Clifford
 1975 "Common sense as a cultural system." *Antioch Review* 33:5-26.
- Gelles, Richard J.
 1972 *The Violent Home: A Study of Physical Aggression between Husbands and Wives*. Beverly Hills: Sage.
- Gottfredson, Michael R., and Michael J. Hindelang
 1979 "A study of the behavior of law." *American Sociological Review* 44:3-18.
- Hagan, John
 1974 "Extra-legal attributes and criminal sentencing: an assessment of a sociological viewpoint." *Law and Society Review* 8:357-83.
- Jaco, E. Gartley (ed.)
 1972 *Patients, Physicians and Illness: A Sourcebook in Behavioral Science and Health*. 2nd ed. New York: Free Press.

- Jaeger, Gertrude, and Philip Selznick
1964 "A normative theory of culture." *American Sociological Review* 29:653-69.
- Koch, Klaus-Friedrich
1974 *War and Peace in Jálémói: The Management of Conflict in Highland New Guinea*. Cambridge, Ma.: Harvard University Press.
- Mechanic, David
1968 *Medical Sociology: A Selective View*. New York: Free Press.
- Parnas, Raymond I.
1967 "The police response to the domestic disturbance." *Wisconsin Law Review* 1967: 914-60.
- Rossi, Peter H., Emily Waite, Christine E. Bose, and Richard E. Berk
1974 "The seriousness of crimes: normative structure and individual differences." *American Sociological Review* 39:224-37.
- Schutz, Alfred
[1953] "Common-sense and scientific interpretation of human action." Pp. 3-47 in *Collected Papers. Volume 1: The Problem of Social Reality*. The Hague: Martinus Nijhoff.
- Sellin, Thorsten, and Marvin E. Wolfgang
1964 *The Measurement of Delinquency*. New York: Wiley.
- Shils, Edward
1960 "Mass society and its culture." *Daedalus* 89:288-314.
- Sudnow, David
1965 "Normal crimes: sociological features of the penal code in a public defender office." *Social Problems* 12:255-76.
- Terry, Robert M.
1967 "The screening of juvenile offenders." *Journal of Criminal Law, Criminology and Police Science* 58:173-81.

THEORY AND RESEARCH IN THE SOCIOLOGY OF LAW*

MICHAEL R. GOTTFREDSON

State University of New York, Albany

MICHAEL J. HINDELANG

*State University of New York, Albany**American Sociological Review* 1979, Vol. 44 (February):27-37

Black's (1979) comment, when read in conjunction with *The Behavior of Law* (Black, 1976), raises several questions pertaining to the scientific adequacy of his theory of law. This paper assesses Black's theory against two criteria of scientific adequacy: generality and falsifiability. Black (1979) rejects our use of victimization survey data to test his theory because these data do not allow a comparison of that conduct initially labelled as crime and that conduct not so labelled. Our interest was not in this first-stage labelling, but in the second-stage decision by victims to increase the quantity of law by calling the police, *given* that the respondent had labelled some behavior as a crime. Black argues against such second-stage tests of his theory and also argues that his theory must be viewed as valid only with respect to the initial labelling of conduct as illegal; as a result, all labelling decisions predicated on the initial labelling decision are beyond the province of his theory. We also note that the basis of Black's (1979) restriction of the generality of his theory is inconsistent with his original statement of the theory (Black, 1976) in which he uses results from victimization surveys (of the same kind he now argues are irrelevant to the theory) to support his theory. In addition, Black's (1979) criteria for data sufficient to test his theory reduce the potential for testing his theory. Finally, we discuss some issues regarding conduct and its seriousness as they relate to Black's theory.

Introduction

A sine qua non of scientific theory is that it be capable of empirical test and refutation. Scientific theories have other important characteristics as well; for example; they organize, predict, and explain a body of knowledge. Another desirable characteristic of scientific theory is generality; desirable in the sense that the theory ac-

count for as many aspects of the phenomenon of concern as possible. Furthermore, scientific theories are enhanced to the degree that they make explicit how the critical variables are to be operationalized.

Most of these qualities appear in *The Behavior of Law* (Black, 1976). As can be seen by reference to our paper (Gottfredson and Hindelang, 1979), researchers testing Black's theory need not rely solely on their own uncertain interpretations of abstract theoretical variables, but instead can rely primarily on Black's own exam-

* Address all communications to: Michael R. Gottfredson; Criminal Justice Research Center; One Alton Road; Albany, NY 12203.

ples; moreover, when Black (1976) cites empirical evidence to support his theoretical propositions, the character of this evidence reduces the ambiguity surrounding the use of theoretical constructs, thus facilitating tests of his theory.

In his comment on our empirical test of his theory, Black (1979) seems to have retreated from the positions that give his (Black, 1976) theory these virtues. If his arguments are accepted, his comment on our research has the effect of reducing the value of his theory in two important respects. Both its generality and the potential for unambiguous empirical test have been markedly reduced.

With respect to its generality, Black (1979) seems to have relegated much of what is typically regarded as within the province of the sociology of law to unimportance by focusing exclusively on the initial labelling of conduct as crime. The basis for this conclusion and some of the implications of Black's (1979) comment on this point will be the first focus of our discussion.

The second focus of our discussion revolves around the standards that Black invokes in judging our data, and the implications of accepting those standards for the falsifiability of his theory.

Finally, Black (1979) has argued that conduct and estimates of its seriousness cannot be the basis for useful theoretical constructs in the sociology of law. Contrary to the emphasis of Black's comment on our paper, the empirical validity of his propositions as revealed in our data may be judged apart from the validity and utility of consensually defined seriousness. We conclude with a discussion of these issues.

THE GENERALITY OF THE BEHAVIOR OF LAW

There can be little doubt that Black (1976) envisions his theory of law as being capable of explaining law in all settings at all times:

The quantity of law varies in time and space. It varies across the centuries, decades and years, months and days, even the hours of a day. It varies across societies, regions, communities, neighborhoods, families, and

relationships of every kind. . . . It varies across the world and its history. . . . All of this is the behavior of law, and it is possible to explain all of it. (Black, 1976:3-4)

With numerous examples, Black also is explicit concerning how the quantity of law, as he defines it (Black, 1976:2), can be measured:

A complaint to a legal official, for example, is more law than no complaint, whether it is a call to the police, a visit to a regulatory agency, or a lawsuit. Each is an increase in the quantity of law. (Black, 1976:3)

Black's theory of law aims to predict the quantity of law everywhere that it occurs, whether it be civil law, administrative law, or criminal law. And within the criminal law even at each stage of the criminal process:

The propositions address a wide range of legal variation, including, for example, variation in what is defined as illegal, who calls the police or brings a lawsuit, who wins in court, who appeals or wins a reversal. . . . (Black, 1976:ix)

More explicitly within the criminal law, Black argues that the victim's complaint, recognition of the complaint, arrest, indictment, prosecution, conviction, and punishment are all indicators of the quantity of law (Black, 1976:3). In fact, "[a]ny initiation, invocation, or application of law increases its quantity . . ." (Black, 1976:3). Thus, any time law is applied or invoked, Black asserts that his propositions account for it.

From the standpoint of those wishing to test Black's propositions empirically, it is necessary to make some judgment about precisely what Black means by his predictions about the quantity of law. Should these assertions about the quantity of law be read to imply that the relevant predictions are "proximally conditional," or are these predictions "only initially conditional"—only conditional on the behavior subject to the initial labelling as illegal? If they are meant to be "proximally conditional," then the researcher interested in testing Black's theory must assess the propositions in relation to a base of potential application of the law; that is, Black's propositions must be tested at a particular stage of the criminal

process, given that cases reached the immediately prior stage (e.g., who is charged with a crime by the prosecutor, given those arrested). For example, Black (1976:3) argues that "parole is less law" and that "a revocation of parole is more" law. If the propositions are meant to be "proximally conditional," then the relevant test of the propositions explaining release on parole must examine all those eligible for parole. Among those eligible for parole, those released on parole must be compared with those not released on parole. Similarly, the relevant test for explaining parole revocation is among parolees.

If, on the other hand, the assertions about the quantity of law are meant to be "only initially conditional," then the researcher must employ an entirely different strategy with respect to the basis for comparison. The relevant test would ignore previous applications of the law. Under the "only initially conditional" model each invocation of the law is viewed as being equally applicable to all similar behavior regardless of previous labelling decisions. Thus, for example, when Black (1976:3) argues that the propositions in his theory predict who will be convicted at a criminal trial, the relevant empirical test under the "only initially conditional" model would not be "among those tried," but rather "among all persons engaging in behavior that is subject to the initial labelling as illegal."¹

These alternative interpretations have major implications for the generality and the testability of Black's theory. In this respect, then, the basis for Black's rejection of the relevance of our recent examination of propositions found in *The Behavior of Law* is of considerable importance:

... because the incidents labelled as "crimes" for purposes of their study were selected by the respondents, variation in the

labelling process itself was completely obscured, making it impossible to test the theory of law with their data. (Black, 1979:19)

Leaving aside for the moment measurement problems in victimization surveys, what is critical about Black's observation is that the quantity of law is to be predicted under the "only initially conditional" rather than the "proximally conditional" model.

In our study, Black's theoretical propositions were examined in relation to the victim's decision to call the police, which is our indicator of the quantity of law. Although it is an important question, we did not study the victim's definition of behavior as criminal (as implied in Black, 1979), which we regard as an earlier and different indicator of the quantity of law. Similarly, we regard the decision by the police to arrest to be a later and different indicator of the quantity of law.

Using the "proximally conditional" model, we tested Black's theory with respect to calls to the police by studying how well his propositions predict calls to the police, *given* that the event was defined as a crime by the respondent. Black (1979) argues that because the first-stage data (the initial labelling of conduct as crime) are not available, the second-stage data (whether or not the crime was reported to the police) are irrelevant to his theory. Thus, Black (1979) argues against testing his theory under the "proximally conditional" model.

However, the "proximally conditional" model appears to be compatible with both the theory and the supporting research presented in *The Behavior of Law*. Consider, for example, the following passage:²

Thus, intimates are less likely to call the police about each other (see McIntyre, 1967:45; Block, 1974:560-561). *If they do*, the police are less likely to handle their problem as a crime (Black, 1970:740-741), and, in any case, they are less likely to make an arrest (Black, 1971:1097-1098). *If an intimate is arrested*, he is less likely to be prosecuted (Hall, 1952:318). (Black, 1976:42, emphases added)

Two aspects of this passage are worthy of note. First, Black supports his theoretic

¹ Rather than "among all persons engaging in behavior that is subject to the initial labelling as illegal," Black sometimes makes comparisons to the general population (for example, compare Black [1976] pages 31 and 18 to page 24). In the latter instance, Black's theory is comparable to labelling "theory" in its most characteristic form (e.g., Becker, 1963; Erickson, 1962).

² Similar examples are found throughout Black (1976, e.g., 17, 32, 64, 95, 114).



cal proposition with data he now claims are incapable of testing the theory. *The studies by Block (1974) and by McIntyre (1967) are analyses of reporting decisions by victims of crime as reflected in victimization surveys.* If Black can use findings from a victimization survey when they support his theory, then to be consistent, data from a conceptually identical study that do not support his theory cannot be deemed irrelevant.³ Otherwise, we are in the peculiar situation of determining the relevance of empirical proof on the basis of whether it does or does not support the theory.

If the Block and McIntyre studies are relevant to the theory, then, the "proximally conditional" model must be the correct one; their studies examine differences in calling the police, *given* that an event has been reported to survey interviewers (or, in Black's [1979] terms, given that the respondent has labelled the incident as "worthy of police attention"). But note that the quoted passage (Black, 1976:42) gives other strong support to the "proximally conditional" view. Black's prediction about arrest by the police is predicated on the fact that the police were called. And, the prosecution prediction is predicated on arrest.

In *The Behavior of Law*, Black states that his theory of law predicts the quantity

of law at every stage, from the initial definition of what is illegal, through calling the police, to arrest, incarceration, and release on parole (Black, 1976:ix). Each of these indicators of the quantity of law, he argues, is explained by propositions relating to stratification, morphology, culture, organization, and social control. Studies in the sociology of law have established that later stages of the criminal justice process in modern America depend largely upon input from earlier stages for the kinds of offenses elicited in victimization surveys. For example, although police and prosecutors can be proactive, much evidence indicates that they are principally reactive with respect to cases that serve as the basis for their decisions (LaFave, 1965; Newman, 1966; Remington et al., 1969; Dawson, 1969; Black and Reiss, 1970; Reiss, 1971; Hindelang and Gottfredson, 1976). Thus, from the initial labelling of conduct as crime to the termination of the criminal justice process, each stage depends primarily on the immediately prior stage for input; that is, the stages are heavily interdependent for the types of offenses studied in our paper.

According to Black's (1976) theory, the cases that do not proceed from one stage to the next are predictable from his propositions. For example, in the quoted passage above, Black (1976:42) argues that his propositions predict that intimates are less likely than strangers to report each other to the police (i.e., strangers disproportionately move forward in the criminal process).⁴ But among those intimates and strangers who do move forward in the process, the police are also less likely to handle complaints between intimates (than complaints between strangers) as crimes. Despite the biased selection from stage to stage, Black's (1976) theory states that the same propositions account for the quantity of law at later as well as at earlier stages. This is necessarily so because his theory (Black, 1976) purports to explain all of the behavior of law with the same set of propositions.

³ By conceptually identical, we mean general population surveys of the same kinds of criminal victimization, using similar measurement techniques. The single survey upon which both of the studies cited by Black are based is methodologically inferior to current victimization surveys in several respects (Hindelang, 1976: chap. 2). Furthermore, the principal methodological difference between the survey cited by Black to support his theory and the survey we used makes the survey data cited by Black less suitable by his own criteria. This earlier survey conducted for the President's Crime Commission (Bunis, 1967) used the "household-respondent" method rather than interviewing all eligible household members regarding the "screen" questions. It is known that the former method substantially undercounts victimizations of household members other than the household respondent (see Hindelang, 1976: chap. 3). That is, victimizations of household respondents (who differ demographically from other household members, e.g., the former are more often female) are overrepresented among victimizations elicited by the survey. Also, the Block (1974) data cited by Black (1976) use only assault victimizations, the crime most undercounted in victimization surveys.

⁴ Because Black often uses phrases like "less likely" without completing the phrase (e.g., "intimates are less likely than nonintimates . . ."), his precise meaning often (as in this quote) can only be inferred from the data cited to support his statement.

It is certainly worthy of note, therefore, that Black's (1979) comment places stringent limitations on the generality of his theory by requiring an "only initially conditional" rather than a "proximally conditional" test. By rejecting the "proximally conditional" model, Black (1979) argues, in effect, that a call to the police is not an increase in the quantity of law over the victim's initial definition of conduct as illegal. To be consistent then, Black must also argue that, *given conviction*, incarceration is not more law than is a disposition not involving incarceration (e.g., fine or probation); that, *given prosecution*, conviction is not more law than acquittal; that, *given arrest*, prosecution is not more law than dismissal of charges; that, *given a complaint*, arrest is not more law than failure to arrest. Rather, Black (1979) argues that his theory can only be tested by using as a base for comparison all identical conduct subject to the initial definition as illegal. Thus, a test of the predictive validity of his theory with respect to conviction (to be consistent with the basis used to reject our test of his theory) must be of the form: How do the "location and direction in social space" of persons convicted for engaging in particular conduct compare with the "location and direction in social space" of persons engaging in identical conduct, regardless of whether the latter are prosecuted, arrested, reported to the police, or even regardless of whether their conduct was initially defined as illegal? In Black's (1979:22) words:

Similar processes of selection—according to the same principles—occur at other stages of the criminal process, such as in the charging and prosecuting of offenses against persons accused of crimes, and, in fact, wherever else cases of any kind are labelled according to legal criteria. If we are to learn how these labels are applied, then, we must examine all of the cases involving the same conduct, regardless of how they have been classified by people in everyday life.

Thus, apparently, Black (1979) no longer purports, as he does in *The Behavior of Law* (1976: e.g., 17, 32, 42, 64, 95, 114), that his theory explains increments in the quantity of law from one stage of criminal processing to another. Moreover, much of the empirical evidence he cites in support

of his theory (Black, 1976), is, according to Black (1979), irrelevant to his theory. Not only are the victimization studies of Block (1974) and McIntyre (1967) deemed irrelevant by his current stance, but so is much other evidence as well. This is so because much of the evidence cited by Black (1976) rests on the "proximally conditional" model. Thus, for example, in support of his propositions relating to organization, Black (1976:95) notes that

... theft from a department store by a customer or an employee has a conviction rate of nearly 100 percent of the cases prosecuted (Cameron, 1964:142; Robin, 1967:696). But for auto theft—almost always a crime against an individual—this rate is only a little over 50 percent (U.S. Federal Bureau of Investigation, 1974:20).

The base of the rate for prosecutions of shoplifting is "persons charged" with this offense, not persons engaging in similar conduct but not charged. Under the "only initially conditional" model that Black now views as appropriate, the base of the shoplifting percentage should be all persons engaging in shoplifting. The evidence cited by Black (1976), suggests that his theory views conviction as an increment in the quantity of law in relation to prosecution, but Black (1979) substantially reduces the scope of his theory by maintaining now that such "proximally conditional" tests are irrelevant to his theory.

Paradoxically, while seeming to dismiss the relevance of our study to his theory of law, Black (1979) again poses the question that our study was designed to address. He argues that our data reflect only incidents deemed "worthy of police attention" by the respondents. He then notes that "... it should be realized that simply because a person considers an incident worthy of police attention does not mean the police will actually be called" (Black, 1979: fn. 3). This is precisely what our study was about; among those incidents deemed "worthy of police attention," what predicts calls to the police? The question Black must address (and fails to address in his comment) is that if his theory explains *all* law, why is it unable to explain this fundamental increase in the quantity of law? Either Black must argue that calling the police, *given* the definition

of conduct as illegal, is not an increase in the quantity of law (and similarly, conviction, *given* prosecution, is not an increase in the quantity of law), or he must accept, at least in principle, such "proximally conditional" studies as relevant to his theory.

FALSIFIABILITY AND THE BEHAVIOR OF LAW

If one accepts all of Black's (1979) arguments with respect to our test of his theory, not only is the generality of his theory markedly restricted but so too is its potential for unambiguous empirical test. It should be stressed that Black's (1979) entire line of argument with respect to the initial labelling of behavior as crime is not relevant to our "proximally conditional" test of his theory as stated in *The Behavior of Law*.⁵ But because it raises fundamen-

tal questions about the testability of his theory, and, more generally, about empirical analyses of the labelling of behavior as criminal, it merits discussion.

Given the arguments in Black's comment, it would seem useful to pose the question: How is his theory that the labelling of crime "varies with its location and direction of social space" (Black, 1979:19) to be assessed? Black suggests (1979:fn. 7) that "data based on direct and unobtrusive observation would therefore appear to be the most reliable way to test the theory of law. . . ."

We see three insurmountable problems that Black (1979) erects to empirical observational tests of how labelling of events as crime varies throughout the social structure. First, Black (1979) insists (by inference from the first part of our paper) that a relevant test of his theory is of the form: Among *all* behavior, what behaviors are labelled as illegal and how is this labelling distributed in social space? Using observational methods now available, it is virtually impossible from a practical standpoint to observe an unbiased sample of all behavior, because so much of it occurs in private settings. It is unlikely that rates of refusal to permit observers into homes, bedrooms, offices, factories, and schools will be randomly distributed throughout the social structure; also, much of the behavior of organized crime figures, street criminals, and corporate executives is likely to be shielded from view. Second, because Black (1979:20) argues that "the concept of 'crime' is inherently vague" and that the social construction of behavior as "crime" is not merely a description but is always an evaluation (and because Black rejects evaluations as inappropriate for testing his theory in this context), an observer's judgment about behavior would be biased by the observer's location in social space.⁶ Third, even if the observer could

⁵ Contrary to Black's (1979:21) assertion, we did not use victimization surveys to test the initial labelling of behavior as crime. Hence, his discussion and critique of victimization surveys for that purpose are technically irrelevant. However, two general points about these surveys need to be noted briefly. First, Black (1979:21) claims that we "apparently did not recognize the broader implications of [undercounting of victimizations] for the validity of [our] study." In earlier work, we (Hindelang, 1976:12-76, 415; Hindelang et al., 1978: chap. 10; Gottfredson and Hindelang, 1977; Garofalo and Hindelang, 1977; Hindelang, 1978) and others (Penick and Owens, 1977; Sparks et al., 1977) have discussed the limitations and biases in victimization surveys. In our paper, we noted the existence and direction of the only bias of which we are aware that bears on the portions of Black's theory we did test. Although we believe that there is ample evidence of measurement error in victimization surveys, particularly in estimating absolute levels of victimization, there are few biases that have been identified that bear on relationships of the kind we used to test Black's (1976) theory. Certainly we are aware of no biases in victimization surveys of the magnitude required to change the overall picture portrayed by the data in our paper. Second, Black (1979:20) leaves the impression that the victimization screen questions primarily used legal jargon such as "rob" and "mugging." Although such terms were used, most screen questions used everyday language such as "take . . . by using force," "beat you up," "threaten you," and "Were you knifed, shot at or attacked?" Third, the sentence "Now, I'd like to ask some questions about crime," only preceded the interview of a single member of each household (the "household respondent"); fewer than half of the persons interviewed were household respondents.

⁶ In Black's (1979:20) words "what is a 'crime' to one person may not be to another. . . ." We presume that because Black's theory is said to predict biases in victimization surveys, then it must also predict biases in observational studies. For example, in an observational study of police arrest decisions, an observer's evaluations of behavior as criminal would be predictable from the observer's location in social space.

be absolutely unbiased and entirely objective, testing how the labelling of behavior as crime is distributed throughout social space could not be determined by observation alone. How can an unobtrusive observer (required by Black, 1979: fn. 7) determine that someone else has labelled an observed event as a crime? Black (1979: fn. 7) rejects social surveys for this purpose. He also rejects behavioral indicators such as calling the police, because an incident labelled as crime (i.e., "worthy of police attention") does not necessarily result in a call to the police (1979: fn. 3). What Black views as the critical aspect of his theory, the initial labelling of behavior as crime by individuals, is a cognitive process. And cognitive processes cannot be observed directly.⁷ Hence, neither observational methods nor any other empirical method can provide data that would meet all of Black's (1979) criteria for adequacy.

THE SERIOUSNESS OF CRIME

In *The Behavior of Law*, Black (1976) is not consistent regarding the relevance of conduct to his theory. In most of the explicit discussions of the relevance of conduct to his theory, Black indicates that it is irrelevant (i.e., is permitted to vary freely), while occasionally he indicates that variation in conduct is relevant (i.e., need be "held constant" in testing propositions).⁸ Thus, for example, on the one hand Black writes:

We recognize that part of Black's (1979) objection to surveys derives from his view that participants cannot report accurately on their own behavior. Surveys are subject to biases of this kind; in toto, however, they seem preferable (for the reasons outlined above) to observational studies for the problem of interest to us (calling the police.)

⁷ Black also ignores the following practical problems with using observational methods for this particular problem: (a) the tremendous cost, given the relative rarity of criminal behavior; (b) intra- and interobserver reliability; and (c) how the relevant independent variables could be measured using unobtrusive observational methods.

⁸ To confuse the matter even more, Black (1976:25, 28) often uses crime-specific examples (e.g., shoplifting and homicide) implying that research that holds conduct constant is relevant to the theory. At other times he discusses crime as if it were a unitary, undifferentiated phenomenon (e.g., Black, 1976:15, 17, 21).

It might be noted that these principles apply *whatever the actual behavior* of the lower ranks—whether for example it is more or less violent or predatory—since their conduct is more likely to be defined as illegal *no matter what they do*. (Black, 1976:31, emphases added)

Similarly, he argues:

The theory of law, however, predicts the same facts. But it explains these facts in a different way, without regard to the motivation or even the conduct of the deviant. . . . (Black, 1976:118, emphasis added)

On the other hand, however, Black writes:

It might be noted that comparisons such as these [studies of variation in punishment] should be made according to the offender's *actual conduct*, rather than according to the crime with which he is charged. . . . (Black, 1976:24, emphasis added)

Despite such inconsistency, however, the major thrust of *The Behavior of Law* is to consider variability in conduct to be virtually irrelevant. As we noted in our paper, at a minimum, Black (1976) must be interpreted as arguing that conduct is less important as a determinant of the quantity of law than are his five dimensions.

Because of Black's ambiguity on the issue of conduct, it was necessary to test his theory under two conditions: permitting conduct to vary and controlling for conduct in some way. Because of the large number of different "offender-conduct" variables in the data and the impossibility of investigating all of them simultaneously, the Sellin-Wolfgang (1964) scale was seen from an empirical point of view as a device useful for summarizing and scaling the offender's conduct along a single dimension, seriousness.⁹ From a

⁹ Our earlier research on reporting to the police, in which many individual elements relating to offender conduct were controlled, found generally that (with the exception of age) demographic characteristics of victims did not explain variations in reporting to the police. Rather, the victim's report of what happened during the event accounted for most of the explained variability (see Hindelang, 1976:chap.14; Hindelang and Gottfredson, 1976). Thus, although our earlier research was not conceived of as a test of Black's theory and did not operationalize most of his dimensions, that research indicated that offender conduct and harm to the victim, measured directly from victims' reports rather than indirectly with Sellin-

theoretical point of view, seriousness (i.e., harm to the victim) was seen as a dimension likely to affect the victim's belief that the conduct demands invocation of state social control mechanisms.

The aspects of victimization that are scaled in the Sellin-Wolfgang weighting system clearly reflect variations in conduct and its consequences that occur during victimization. We analyzed our tables both controlling for, and ignoring, variations in Sellin-Wolfgang scale scores in order to accommodate Black's (1976) inconsistency with respect to this issue. If variation in Sellin-Wolfgang scale scores is deemed to be irrelevant to Black's propositions, then the validity of Black's propositions should be assessed by collapsing across the rows in our tables; if conduct must be controlled, the data should be examined within rows. *Either way Black's (1976) propositions find little support in our data.*

We take seriousness as an indicator of variations in offender conduct and in its consequences to the victim. Black (1979) argues that whether the offender had a weapon, whether the victim was hospitalized, whether the victim was killed, and whether items of large or small value were stolen from the victim, constitute primarily evaluations rather than descriptions of what transpired. Certainly, we do not deny that what happens during an event must be interpreted, or that the seriousness of the consequences of behavior is a matter of judgment. We accept victims' descriptions of the elements scored in the Sellin-Wolfgang procedure as indicators of what happened during the event. We also accept the consensually validated agreement of Sellin and Wolfgang's subjects that, for example, homicide is more serious than hospitalization.¹⁰ Certainly, the resultant

seriousness-scale scores are not error free. But if the error variation is large relative to the true variation—that is, if our indicator is a poor one—why do the seriousness-scale scores do so much better than Black's dimensions in explaining calls to the police?

It is informative to follow the chain of reasoning that Black uses to dismiss our finding that seriousness is related to calls to the police.¹¹ Black (1979:19) first asserts that "... 'crime' and its 'seriousness' are expressions of law itself ..." and, next, that "... 'crime' is an incident worthy of police attention." He concludes (Black, 1979:20) that we have argued that "... 'crime' itself explains why people call the police. ..." Because Black (1979) defines crime as an incident worthy of police attention, his conclusion (which he attributes to us) translates into, "incidents worthy of police attention explain why people call the police." But Black (1979: fn. 3) also asserts that "... simply because a person considers an incident worthy of police attention does not mean the police will actually be called."¹² In this footnote, Black contradicts his textual assertion that calls to the police are explained by crime, a conclusion that he erroneously attributes to us.¹³ Although it

scores have two components: one descriptive (from the victims in our study) and the other evaluative (from Sellin and Wolfgang's independent sample of raters). Importantly, the evaluative component was derived independently of our survey respondents and their decisions to call the police.

¹¹ And the similar findings of others as well. See his (1979) footnote 8. The conclusions in the studies Black cites in this footnote may depend on whether or not seriousness was controlled. As noted above, our conclusions with respect to Black's (1976) propositions are the same, regardless of whether or not seriousness is controlled.

¹² As we noted above, apparently Black does not recognize that our research is an attempt to answer this very question: Among events "considered worthy of police attention" what differentiates those reported from those not reported to the police?

¹³ Although Black implies throughout his comment that there is a necessary (even a definitional) relationship between seriousness in its conventional sense and calls to the police, it should be obvious that there is no necessary relationship between the two. Apart from offender conduct and its consequences to victims, there are many contingencies that affect the likelihood that a victim will call the police: insurance policies may require reporting to the police as a condition for processing claims; hos-

Wolfgang seriousness scores, were predictive of calling the police. Thus, conduct, independent of assessments of its seriousness, predicts calls to the police.

¹⁰ Black (1979:19) strongly overstates his case when he asserts that we "... mistake a variable that requires explanation for one that provides it" and that (Black, 1979:abstract) we "... mistake an evaluation for a description." What Black fails to recognize is that our resultant Sellin-Wolfgang scale

impedes effective communication, we have no quarrel with Black's choosing to make words mean what he wants them to mean rather than adhering to their conventional usage, as long as he does not invoke his meaning to explain our words.¹⁴

On a related issue, Black (1979) argues, and we agree, that the Sellin-Wolfgang seriousness-scaling procedure did not permit the social conditions under which their crime vignettes occurred to vary systematically; hence, the resultant seriousness-scale scores are not sensitive to variation in the social conditions under which crimes occur. For Black, this is critical, because his conception of seriousness depends upon the social conditions under which crimes occur.¹⁵ But when the

pitals, doctors, and restitution and compensation programs may require police notification as a prerequisite for dispensing services and benefits to victims; property that is licensed and/or has serial numbers may be reported when stolen because there is some chance of tracing such property; if the victim can offer the police a description of the offender or the offender's vehicle, the crime may be more likely to be reported than if the victim cannot; if the victim was engaged in illegal or deviant conduct (e.g., visiting a house of prostitution or engaging in illegal gambling) the victim may be less likely to report a crime to the police; fear of reprisal or fear of increasing familial discord may inhibit reporting to the police; mistrust or fear of the police may decrease the likelihood of a report to the police; embarrassment at having been victimized and at having to relate the story of the crime to the police may discourage reporting to the police; and the victim may believe that the physical, property, or psychological damage that has been done by the victimization cannot be repaired by calling the police. Such eventualities may be directly or inversely related to seriousness-scale scores or they may be unrelated to these scores. Certainly, most observers would not regard these as aspects of seriousness.

¹⁴ Another example of this phenomenon is his quote of our fn. 5 (Black, 1979:21): "This bias probably works against Black's hypothesis [about the effect of intimacy on the labelling of crime]." The appropriate bracketed phrase should be "about the effect of intimacy on the victim's decision to report the incident to the police." Otherwise, the reader is misled into believing that our study was about the initial labelling of conduct as crime, rather than about calls to the police.

¹⁵ Black (1979) points out that Rossi et al. (1974) did permit the social conditions to vary in their study of the relative seriousness of events and that such conditions were related to the seriousness ranks. Had we used such a scale as an indicator of seriousness, rather than a scale that did not permit these

interest centers on conduct and its consequences to the victim, such a procedure is preferable. It should be obvious that if Black's position is correct and the social conditions under which crime occurs are all-important, there should be no relationship between a seriousness measure based principally on conduct (i.e., not on the conditions under which it occurs) and victims' reports to the police (or any other quantity of law). Furthermore, if Black is correct, his dimensions, which incorporate such variables as the victim-offender relationship and the relative social ranks of the victim and the offender, should be predictive of reporting to the police. Our data show that the measure of conduct and its consequences to the victim employed in our study was more strongly related to the quantity of law than were Black's dimensions. Therefore, although what is regarded as serious depends, in part, on the social conditions under which it occurs, it depends in large part on conduct as well.¹⁶

Finally, regardless of the adequacy of our measure of seriousness, the fact remains that, in our data, Black's propositions as we have operationalized them, generally do not account for a substantial amount of variability in calls to the police. Black (1979:21) maintains that his "theory of law predicts and explains common sense . . .," which is what he construes our seriousness explanation of calls to the police to be. But if Black's theory of law predicts such "common sense," then his dimensions should have been able to account for at least as much variance as that accounted for by Sellin-Wolfgang seriousness scores. Black's comment fails to offer compelling justification, much less evidence, for why they do not.¹⁷

conditions to influence the seriousness scores, and analyzed Black's propositions within categories of these social condition-relevant scores, Black's dimensions would have been confounded with the seriousness scores.

¹⁶ Others have found that conduct and its consequences to victims can be useful in explaining variation in the quantity of law. For example, the first proposition of Jerome Hall's (1952:318) theory of the rate of prosecution of known offenders is that "the rate of prosecution varies directly in proportion to the gravity of harm."

¹⁷ For our part, and to aid any future research, we

CONCLUSION

Black dismisses our work because it does not comport with his notion of what are the desirable properties of science. Labelling and dismissing theoretical positions that are not compatible with one's own as "nothing more than common sense" is simply not persuasive. Common sense itself is a variable aspect of reality. For example, *The Behavior of Law* (1976) has been criticized on this ground:

Black's propositions are somewhat self-evident: nothing more and nothing less than systematized common sense. But there are some problems concerning the *explanatory* power of this systematized common sense. (Eder, 1977:137)

Clearly, something more is required as the basis for judging the adequacy of scientific theories. In the introduction we enumerated several criteria for scientific theory. Many of these are embodied in *The Behavior of Law*. It would be unfortunate if Black's (1979) clarification of the theory were to have the effects of banishing his theory as originally stated from the jurisdiction of empirical test and substantially reducing its generality. When viewed as a "proximally conditional" model, Black's (1976) theory is extremely general and it deserves to be tested extensively and refined on the basis of research findings.

Ultimately, the most important criterion for a scientific theory is that it be compatible with the facts. Otherwise, what does it mean to have sociological theory "in its pure form" (Black, 1979:19) if it does not agree with the best available evidence?

REFERENCES

- Becker, Howard S.
1963 *Outsiders: Studies in the Sociology of Deviance*. New York: Free Press.
- Black, Donald
1976 *The Behavior of Law*. New York: Academic Press.
1979 "Common sense in the sociology of law." *American Sociological Review* 44:18-27.
- Black, Donald and Albert Reiss
1970 "Police control of juveniles." *American Sociological Review* 35:63-79.
- Block, Richard
1974 "Why notify the police: the victim's decision to notify the police of an assault." *Criminology* 11:555-69.
- Dawson, Robert
1969 *Sentencing: The Decision as to Type, Length, and Conditions of Sentence*. Boston: Little, Brown.
- Eder, Klaus
1977 "Rationalist and normative approaches to the sociological study of law." *Law and Society Review* 12:133-44.
- Ennis, Philip H.
1967 *Criminal Victimization in the United States: A Report of a National Survey*. A report to the President's Commission on Law Enforcement and Administration of Justice. Washington, D.C.: U.S. Government Printing Office.
- Erikson, Kai
1962 "Notes on the sociology of deviance." *Social Problems* 9:307-14.
- Garofalo, James and Michael Hindelang
1977 *An Introduction to the National Crime Survey*. SD-VAD-4. Washington, D.C.: U.S. Government Printing Office.
- Gottfredson, Michael and Michael Hindelang
1977 "A consideration of memory decay and telescoping biases in victimization surveys." *Journal of Criminal Justice* 5:205-16.
1979 "A study of the behavior of law." *American Sociological Review* 44:3-18.
- Hall, Jerome
[1935] *Theft, Law, and Society*. 2nd ed. Indianapolis: Bobbs-Merrill.
- Hindelang, Michael
1976 *Criminal Victimization in Eight American Cities: A Descriptive Analysis of Common Theft and Assault*. Cambridge, Ma.: Ballinger.
1978 "Race and involvement in common-law personal crimes." *American Sociological Review* 43:93-109.
- Hindelang, Michael and Michael Gottfredson
1976 "The victim's decision not to invoke the criminal justice process." Pp. 57-78 in W. McDonald (ed.), *The Victim and the Criminal Justice System*. Beverly Hills: Sage.
- Hindelang, Michael, Michael Gottfredson and James Garofalo
1978 *Victims of Personal Crimes: An Empirical Foundation for a Theory of Personal Victimization*. Cambridge, Ma.: Ballinger.
- LaFave, Wayne
1965 *Arrest: The Decision to Take a Suspect into Custody*. Boston: Little, Brown.
- McIntyre, Jennie
1967 "Public attitudes toward crime and law enforcement." *The Annals of the American Academy of Political and Social Science* 374:34-46.
- Newman, Donald
1966 *Conviction: The Determination of Guilt or*

would have welcomed a discussion of "how [we] measure variables and their effects" (Black, 1979:19). In our view, as demonstrated by the quotes from Black (1976) in our paper, our operationalization of his propositions was closely tied to Black's own words, whenever possible.

- Innocence Without Trial. Boston: Little, Brown.
- Penick, Bettye and Maurice Owens (eds.)
1976 *Surveying Crime*. Washington, D.C.: National Academy of Science.
- Reiss, Albert
1971 *The Police and The Public*. New Haven: Yale University Press.
- Remington, Frank, Donald Newman, Edward Kimball, Marygold Melli, and Herman Goldstein
1969 *Criminal Justice Administration*. Indianapolis: Bobbs-Merrill.
- Rossi, Peter, Emily Waite, Christine Bose, and Richard Berk
1974 "The seriousness of crime: normative structure and individual differences." *American Sociological Review* 39:224-37.
- Sellin, Thorsten and Marvin Wolfgang
1964 *The Measurement of Delinquency*. New York: Wiley.
- Sparks, Richard, Hazel Genn, and David Dodd
1977 *Surveying Victims: A Study of the Measurement of Criminal Victimization, Perceptions of Crime, and Attitudes to Criminal Justice*. New York: Wiley.

ERRATUM

An error occurred in Jeffrey C. Alexander's article, "Formal and Substantive Voluntarism" (*ASR* April, 1978). On page 182 (eleventh line from the bottom, left column), *international* should read *intentional*.

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Robin M. Williams, Jr., Department of Sociology, Cornell University, Ithaca, New York 14853.

CLASS AS CONCEIVED BY MARX AND DAHRENDORF: EFFECTS ON INCOME INEQUALITY AND POLITICS IN THE UNITED STATES AND GREAT BRITAIN*

ROBERT V. ROBINSON
Yale University
Center for Policy Research

JONATHAN KELLEY
Institute of Advanced Studies,
The Australian National University, and
Center for Policy Research

American Sociological Review 1979, Vol. 44 (February):38-58

The class theories of Karl Marx and Ralf Dahrendorf, although subject to much theoretical analysis, largely have been ignored in the dominant lines of quantitative research on status attainment and the political consequences of social stratification. This paper attempts to bridge this gap by drawing out some of the implications of Marx's ownership of the means of production and Dahrendorf's authority for both income inequality and politics, by evaluating these implications empirically and by showing how these conceptions of class can be incorporated into the dominant Blau-Duncan model of status attainment. Using survey data from large national samples in the United States and Great Britain, we show that both Marx's and Dahrendorf's class models have important implications for men's income, increasing by almost half the variance explained by the conventional Blau-Duncan model. The income of American women, in contrast, is little influenced by class and this explains a substantial part of the male-female income gap. As Marx, Dahrendorf, and others predicted, class position has a stronger impact on class identification and politics in Great Britain than in the United States. An analysis of the transfer of class position from one generation to the next in Britain suggests the existence of two overlapping but distinct stratification systems, one a class system rooted in ownership of the means of production and authority, and the other a status system based on education and occupational status.

Dominated by the Blau-Duncan (1967) paradigm, quantitative research on stratification has focused narrowly on education and occupational status while generally ignoring more conflict oriented aspects of stratification stemming from the hierarchical organization of work. In

this paper we suggest that the conventional paradigm be extended to include two additional dimensions of stratification, each the focus of a major theoretical tradition—Karl Marx's *ownership of the means of production* and Ralf Dahrendorf's exercise of *authority in the workplace*. Although Marx's and Dahrendorf's class theories have been subject to much theoretical analysis,¹ there has been little attempt to assess their empirical adequacy.² Our general aim is to attempt to

*Address all communications to: Robert V. Robinson; Department of Sociology; Yale University; New Haven, CT 06520.

Revised version of a paper presented at the annual meeting of the American Sociological Association, Chicago, 1977. We gratefully acknowledge financial assistance from the National Institute of Mental Health (Grant No. R01-MH26606-01). We thank Peter M. Blau, Lewis A. Coser, Ralf Dahrendorf, Otis Dudley Duncan, Anthony Giddens, Patty Gwartney-Gibb, Lawrence E. Hazelrigg, F. Lancaster Jones, Bernice A. Pescosolido, Patricia A. Roos, John D. Stephens, Arthur L. Stinchcombe, J. L. P. Thompson, Donald J. Treiman, R. Stephen Warner, Erik Olin Wright, and the anonymous referees of this *Review* for their helpful comments, and the National Opinion Research Center and the Inter-University Consortium for Political Research for making the data available. Sole responsibility for any errors rests with the authors.

¹ Theoretical critiques of Marx are too numerous to mention here; for Dahrendorf see Giddens, 1973; Hazelrigg, 1972; Turner, 1973; Weingart, 1969.

² Although numerous empirical studies have been based on Marx's class theory, to our knowledge only Wright and Perrone's (1977) work, which we discuss later, measures class in a way which is at all close to Marx's definition of it. Two empirical studies of Dahrendorf's theory have been attempted. One used occupation as a surrogate for authority (Lopreato, 1968), a procedure which we view as inappropriate (see Table 2), and the second dealt with topics different from those we discuss here (Fox et al., 1977).

bridge this gap, demonstrating the empirical importance of these class models and integrating them into the established tradition of quantitative research. Specifically, we first propose operationalizations of Marx's and Dahrendorf's concepts of class and draw out their theoretical and empirical implications for each other and for the Blau-Duncan status model. Second, we consider the class bases of income inequality and propose a modification of Dahrendorf's theory, suggesting that there are more authority classes than he envisioned. We then test Marx's, Dahrendorf's and our own predictions about income inequality on American and British data, considering men and women separately in the United States. Third, we test Marx's and Dahrendorf's prediction that the political consequences of class position are more important in Britain than in the U.S. Fourth, we use the British data to investigate the extent to which a father's class position as defined by Marx and Dahrendorf influences his son's attainments. We conclude that there are two distinct stratification systems in modern society, one the familiar status system centering on education and occupational status and the other a class system rooted in ownership of the means of production and authority.

THEORETICAL BACKGROUND

The Marxian Class Model

Marx distinguishes one class from another on the basis of two criteria, ownership of the means of production and purchase of the labor power of others. He defines three classes in modern bourgeois society. *Capitalists* own the means of production and purchase the labor power of others; *workers* neither own the means of production nor purchase the labor power of others but instead sell their own labor power; and the minor and transitional class of the *petite bourgeoisie* owns the means of production but does not purchase labor power.³ In a modern econ-

omy, Marx's criterion of ownership of the means of production may reasonably be expanded to include all forms of control of the means of production, whether they stem from legal ownership or formal control. Thus we include in the capitalist class managing directors who control but do not own the means of production since in practice they have effective control over their firms, can use them to further their own interests, and often own some stock in them. Many neo-Marxists argue that managing directors stand in a similar structural, if not legal, relation to the means of production and share many interests in common with the capitalist class (e.g., Baran and Sweezy, 1966; Domhoff, 1967; Kolko, 1962; Mills, 1957; Nichols, 1969; Zeitlin, 1974). For terminological simplicity we will refer to both owners and managing directors as "controlling the means of production."

As Marx (1852:515-6) conceives them, objective classes necessarily have conflicting interests by virtue of the exploitative nature of class relations but class members may or may not be subjectively aware that they share common interests "in hostile opposition" to those of another class, whence the distinction between class "in itself" and class "for itself."

Dahrendorf's Class Model

In Dahrendorf's (1959:166-74) analysis, classes are distinguished on the basis of their relations to authority. Members of the *command class*⁴ exercise authority,

not purchase labor power, as do Wright and Perrone (1977). While the difference between, for example, a self-employed plumber who works alone (*petit bourgeois*) and one who also has an assistant (*capitalist*) may seem slight, the empirical evidence indicates that there are noticeable differences particularly with regard to income. Other transitional classes from the earlier feudal epoch are land owners and peasants (Marx, 1852:517-9; Marx and Engels, 1932). Since these classes constitute such a small proportion of the population of modern industrial societies, we ignore them here. Elsewhere (Robinson, 1978; forthcoming), we have treated them in detail.

⁴ In our use of the labels, command and obey class, we follow Lopreato (1968). Dahrendorf does not label his classes.

³ Although Marx never defines the *petite bourgeoisie* as anything but smaller capitalists (Marx and Engels, 1848:25), it seems reasonable to define them as owners of the means of production who do

regardless of whether they are subject to it themselves; i.e., they have subordinates in the workplace; *obey class* members are subject to the authority of others and exercise none themselves, i.e., someone supervises them at work and they do not supervise anyone;⁵ and individuals in the small *classless* group neither exercise authority nor are subject to it, i.e., they work on their own.⁶ For Dahrendorf, as for Marx, class relations inherently involve conflicting interests, the command class having an interest in maintaining the authority structure and the obey class having an interest in overthrowing it. However interests may be only latent (more or less unconscious) or they may be manifest (conscious), in which case class members may mobilize around them (Dahrendorf, 1959:174-9).

Differences between Marx's and Dahrendorf's Class Models

Dahrendorf's concept of class is quite different from Marx's, as can be seen in Table 1. Marx's model stresses the *control* dimension of hierarchical position in the workplace while Dahrendorf's emphasizes the *authority* dimension, as we shall call them.⁷ By comparing Panels A and B, one can see that Marx's distinction between capitalists and workers is lost within Dahrendorf's command class; similarly Dahrendorf's distinction between command and obey classes is lost within

Marx's worker class. Marx, focusing on the top of the organizational hierarchy, asks whether someone is at the very top or is, instead, subject to a boss's control. Dahrendorf, focusing on the bottom of the organizational hierarchy, asks whether someone is at the very bottom, with no authority whatsoever or has, instead, at least one subordinate. Each uses the other's criterion only to separate out a marginal class which Marx calls the *petite bourgeoisie* and Dahrendorf defines as *classless*. The result is that Marx misses what is for Dahrendorf the key class boundary while Dahrendorf misses what is for Marx the key boundary. We will show that Marx's and Dahrendorf's models are statistically as well as theoretically distinct and that they usually have independent, and sometimes quite different, effects on the various dependent variables we consider.

Wright and Perrone's "Marxist Class Categories"

Wright and Perrone (1977) have recently proposed what they claim is an extension of the traditional Marxian class model by inserting a "manager" group between the capitalist and worker classes (see also Wright, 1976). Their managers are that subgroup of the worker class which exercises authority over others (see Table 1, Panel A, note a). This conceptualization is quite different from Marx's own analysis, since he does not see authority relations as constituting a basis for class conflict within the worker class any more than he sees income or occupational differences as constituting such a basis. In our view, Wright and Perrone's classification should be regarded as one way of combining the traditional Marxian model with Dahrendorf's model based on authority, rather than as an extension of Marx's model, and we will show that its effectiveness in explaining income and attitudes depends as much on Dahrendorf's authority as on Marx's control or ownership. The capitalist and *petit bourgeois* classes in Wright and Perrone's scheme are exactly Marx's; their sole modification is to divide the worker class in a way that corresponds precisely to

⁵ Dahrendorf (1959:256, 262, 287) notes that some positions, such as foreman and bureaucrat, are especially difficult to classify, but after some discussion handles them as we have.

⁶ For Dahrendorf (1959:198), all "imperatively coordinated associations" (e.g., the family, unions, sports clubs) are characterized by two authority classes, a position which has generated considerable criticism (e.g., Giddens, 1973:73). However, he does mention that authority relations in industrial production, which we here consider, tend to overshadow the authority relations of other associations since they occupy so large a space in people's lives (1959:142-3). Dahrendorf (1967) has considered some objections to his original formulation but these do not affect the basic scheme.

⁷ Following Marx, we operationalize the control dimension as a dichotomy. Although dichotomous for Dahrendorf, the authority dimension is illustrated as a trichotomy for comparison with our modification of his theory (Panel C), which is described later.

Table 1. Operationalization of Class as Conceived by Marx and Dahrendorf, and Improved Dahrendorf Model*

	Authority in the workplace		
	Exercises authority over others		Does not exercise authority
	(two or more levels of subordinates or employees)	(one level of subordinates or employees)	(no subordinates or employees)
Control of the means of production			
<i>Panel A. Marx</i>			
Controls the means of production (no supervisor or employer)	<i>capitalist</i>	<i>capitalist</i>	<i>petit bourgeois</i>
Does not control the means of production (has supervisor or employer)	<i>worker^a</i>	<i>worker^a</i>	<i>worker</i>
<i>Panel B. Dahrendorf</i>			
Controls the means of production (no supervisor or employer)	<i>command</i>	<i>command</i>	<i>classless</i>
Does not control the means of production (has supervisor or employer)	<i>command</i>	<i>command</i>	<i>obey</i>
<i>Panel C. Improved Dahrendorf</i>			
Controls the means of production (no supervisor or employer)	<i>upper command</i>	<i>lower command</i>	<i>classless</i>
Does not control the means of production (has supervisor or employer)	<i>upper command</i>	<i>lower command</i>	<i>obey</i>

* Categories of the variables used in operationalizing the class models (see note 15) are given in parentheses.

^a Manager group by Wright and Perrone's (1977) definition.

Dahrendorf's distinction between the command and obey classes of industry. Using both Marx's and Dahrendorf's conceptions of class leads to *exactly* the same division of the population; there is no class distinguished using Wright and Perrone's scheme that could not be distinguished with Marx and Dahrendorf combined. Such alternative parameterizations necessarily predict the same variance in other variables and so cannot be distinguished empirically on that basis.⁸ However, we will show that capitalists have high incomes *not only* because they own the means of production but also because they exercise authority. The true effects of owning the means of production can only be discerned by controlling (in the usual statistical sense) for authority by making ownership one variable and authority a second variable and using standard multivariate techniques for separating their effects. Wright and Perrone's typology does not lend itself to such techniques; they leave themselves with no

practical way of discovering the effects of control of the means of production, Marx's key theoretical variable, apart from the effects of authority. In contrast, our approach treats Marx's control of the means of production and Dahrendorf's authority as distinct aspects of the hierarchical organization of work and determines the effects of these relative to each other and to the variables of the Blau-Duncan model.

Class and Status Models of Stratification

The originators of the Blau-Duncan status model began with the assumption that "a fundamental trend toward expanding universalism characterizes industrial society" (Blau and Duncan, 1967:429-30), and that the rate of social mobility is generally so high in modern societies, and social groupings so transitory, that belonging to particular groups ceases to have much meaning to the individuals who are temporarily in them (Goldthorpe, 1976). There are no clearly defined classes with opposing interests, as with Marx and Dahrendorf, but rather a "socioeconomic" continuum on which one can rank individuals. The measures of occupational

⁸ Both must be implemented by three distinct dummy variables (or the equivalent), e.g., for Wright and Perrone, capitalist, manager, and petite bourgeoisie; and for Marx and Dahrendorf, capitalist, command class, and petite bourgeoisie.

standing used in this tradition assume a graduated continuum with no clear discontinuities (Duncan, 1961; Treiman, 1977); none of them comes close to measuring class in the categorical sense which it is traditionally given by Marx and most European sociologists. In a manner which is quite compatible with, and offers a reasonable extension of, Blau and Duncan's analysis, the flourishing human capital tradition in economics offers an analysis of education and training which also assumes relatively open, universalistic competition and a relatively continuous distribution of education and skills without clear boundaries or sharp discontinuities (e.g., Becker, 1965; Mincer, 1974).

Although it is often assumed that occupational standing and class are virtually identical, in fact there is little overlap between them, as both Marx (1893:862-3) and Dahrendorf (1959:138-40) stress. Occupations may be performed in a variety of class contexts. Lawyers, plumbers, or cooks, to name only a few examples, may work on their own account and hire assistants (and so be capitalists in the command class), or may work for a large company without any subordinates under them (and so be workers in the obey class), or may work for a large company and have subordinates (and so be workers in the command class), or may work alone on their own account (and so be petit bourgeois and classless). There is equally little reason for occupations with high status or prestige to be restricted to higher class positions, or for occupations with low status to appear only in lower class positions. We will show that in both the U.S. and Great Britain the actual correlations between class position and occupational status are distinctly modest.

Blau and Duncan's model and the human capital tradition have recently come under considerable criticism for ignoring the inheritance of property, various ascriptive elements in the class system, and conflict generally (Atkinson, 1975; Burawoy, 1977; Crowder, 1974:37; Doeringer and Piore, 1971; Giddens, 1973:19-20; Sahota, 1978:17-9; see, however, Griliches, 1977; Kelley, 1978). In fact, analysts in both the Blau-Duncan and

conflict traditions tend to deal only with their school's model of stratification and to ignore other models. Yet there is no theoretical justification or empirical necessity to take such one-sided views. Although all capitalists, for example, have many things in common, there is no reason for conflict theorists to ignore the clear differences between capitalists with high, middle, and low occupational status (e.g., owners of law firms, plumbing contractors, and hot dog stand owners). Nor is there any reason for researchers in the Blau-Duncan tradition to ignore the evident categorical differences between persons in the same occupation (e.g., plumbers who are employees vs. self-employed plumbers who hire other workers; engineers who supervise others vs. engineers at the bottom of the authority hierarchy).

Class and Income

Neither Marx nor Dahrendorf offers an explicit theory of the relation between class and income, a matter tangential to their primary concern with delineating the structural bases for political organization and mobilization. Marx (1893:862-3; 1902) insists that classes must not be equated with income groupings; they are not defined by either the "sources of revenue" or the "size of purses." Yet the exchange relationship between the capitalist and worker is inherently unequal and Marx (1849:31; 1867b:708-9, 715-6) expects the capitalist's profit generally to exceed the worker's wages in bourgeois society.⁹ Dahrendorf (1959:138-40) also views classes as "not based on the level or source of income" and, although he expects that class and income are highly correlated, is quite ambivalent about the existence of a causal connection between them. Thus, neither Marx nor Dahrendorf is particularly informative in analysing the class bases of income inequality.

⁹ Marx's concern with profits and wages is clearly more suited to an analysis of wealth than of income, although as Duncan (1968b:688) points out, there is a close relation between the two. Wealth put to use as capital generates income and income saved or invested contributes to wealth.

We would argue that there are, nonetheless, several reasons to expect that capitalists will be paid more than workers and command class members will be paid more than members of the obey class. First and most obviously, given that the upper classes in both Marx's and Dahrendorf's schemes have some power over the lower classes they should be able, within limits, to set the wages of those below them and presumably would set the wages of their employees and subordinates below their own. This argument holds especially for capitalists but should apply as well to some higher level managers and supervisors who may either directly determine their subordinates' wages or may indirectly influence these through evaluation of their job performance.

A second theory links class in Dahrendorf's sense with income. Lydall (1968:71, 125-7) argues that the higher salaries paid to supervisors are the result of the need of bureaucracies to fill positions of responsibility. Since supervisors are responsible for the actions of those below them, they have more "worry" than any of their subordinates, and worry is a cost for which they expect to be, and are, remunerated.

A third theory linking class and income, we suggest, may be derived from the marginal productivity theory of wages which essentially argues that employees are paid according to how much their work contributes to the firm's income (e.g., Rees, 1973:chaps. 4 and 5). In most circumstances variations in the ability and motivation of capitalists and supervisors will have more influence on output than similar variations among employees and subordinates. For example, when one employee does poorly that often has little effect on other employees' productivity, but when a boss or supervisor does poorly that will often affect the productivity of all of his or her subordinates. Thus total productivity depends more on bosses' and supervisors' performances than it does on ordinary workers' performances and, as Stinchcombe and Harris (1969) have shown, that implies higher marginal productivity. The economic argument then implies that capitalists and supervisors will in general receive higher pay than their employees or subordinates.

An improvement on Dahrendorf. These arguments suggest not only that capitalists and supervisors will be paid more than nonsupervisory employees, which is perfectly compatible with Marx's and Dahrendorf's analyses, but also that second line supervisors will be paid more than first line supervisors (and so on up the hierarchy), since they have more power to set salaries, more responsibility, and greater marginal productivity than their subordinates. This is not consistent with Dahrendorf's (1959:171) explicit insistence that there are no distinctions among supervisors (i.e., within the command class) and that "authority does not lend itself to the construction of a scale." But we suggest that authority is better conceptualized as a matter of degree and that Dahrendorf's theory should be modified to distinguish between the *lower command class* (who supervise only non-supervisory employees), the *higher command class* (who supervise the lower), and so on (see Table 1, Panel C). We call this the *continuous* version of authority and will show that this modification does noticeably better than Dahrendorf's original scheme in explaining income inequality and is equally effective in other contexts.¹⁰

DATA AND METHODS

NORC's General Social Surveys

The data are from the National Opinion Research Center's 1973, 1974 and 1976 General Social Surveys.¹¹ These are national samples of the noninstitutionalized population of the U.S., 18 years of age or older, conducted in the spring of each year. We have merged them into a single file. They are multistage probability samples to the block level with quotas based

¹⁰ Although he does not accept our modification (personal communication), it is consistent with Dahrendorf's basic logic. He argues that there are inherent differences in interests between the command and obey classes (e.g., between foremen and workers), and a similar analysis would suggest parallel differences between the higher and lower command classes (e.g., between managers and foremen), as indeed is implicit in his discussion of foremen and bureaucrats (1959:256, 262, 287).

¹¹ Our key variable was not asked in 1975.

on sex and age within blocks¹² (NORC, 1973; 1974; 1976). Analysis is confined to the 1,120 men and 598 women who were employed full-time and who responded to questions about their class position.¹³ We restrict our analysis to *full-time* employed persons to ensure comparability in our separate analyses of men and women since a disproportionate number of women who worked did so only part-time.¹⁴ The correlations, means, and standard deviations for the main variables used in the analysis are given in the appendix.

Measures

Marx and Dahrendorf. We determine class position on the basis of respondents' answers to questions on whether they have a boss or supervisor (i.e., the control dimension since those who have no supervisor control the means of production while those who are supervised do not) and the number of levels of subordinates below them (i.e., the authority dimension). This allows us to distinguish each of the cells in Figure 1 and so define our key variables.¹⁵ Distinguishing the pe-

tite bourgeoisie (or classless group in Dahrendorf's terminology) from other classes in these models added virtually nothing to the variance explained in income and attitudes. We therefore ignore this distinction in our analysis and group the petite bourgeoisie with the worker class in Marx's scheme—a classification quite consistent with Marx's expectation that this class would "sink gradually into the proletariat" in advanced capitalist societies (Marx and Engels, 1848:23), and which accords well with their actual income. In Dahrendorf's scheme classless individuals are grouped with the obey class, whom they closely resemble in income.¹⁶ In both Marx's and Dahrendorf's schemes we thus score the primary ruling classes (capitalist for Marx and command for Dahrendorf) one and the remaining classes zero. Alternative analyses in which the petite bourgeoisie was excluded from the sample altogether or treated as a separate class yielded results essentially identical to those reported below; details are available on request.

Nine-category dummy variable model. We also use a scheme which assigns a dummy variable to each possible combination of the two defining variables, i.e., each of the nine cells produced by cross-tabulating authority (three levels) by control (three levels).¹⁷ This captures all possible nonlinearities and interactions between the defining variables, and so gives the *maximum possible effect* that they can have on our dependent variables

¹² The 1976 survey is actually a split sample—one-half block quota and one-half full probability (NORC, 1976:91-4).

¹³ Eliminating the 187 respondents who did not reply to questions about their class position creates no bias. The distributions of education, occupation, and income are virtually identical for the full and restricted samples; in no category of these variables did the two samples differ by more than 0.8%.

¹⁴ Twenty-eight percent of employed women worked part-time compared with only 9% of employed men. Women worked an average of 35 hours per week while men averaged 43 hours per week.

¹⁵ The questions are:

1. Do you have a supervisor on your job to whom you are directly responsible?
 - 1a. Does that person have a supervisor on the job to whom he or she is directly responsible?
2. In your job, do you supervise anyone who is directly responsible to you?
 - 2a. Do any of *those* persons supervise anyone else? (NORC, 1976:80).

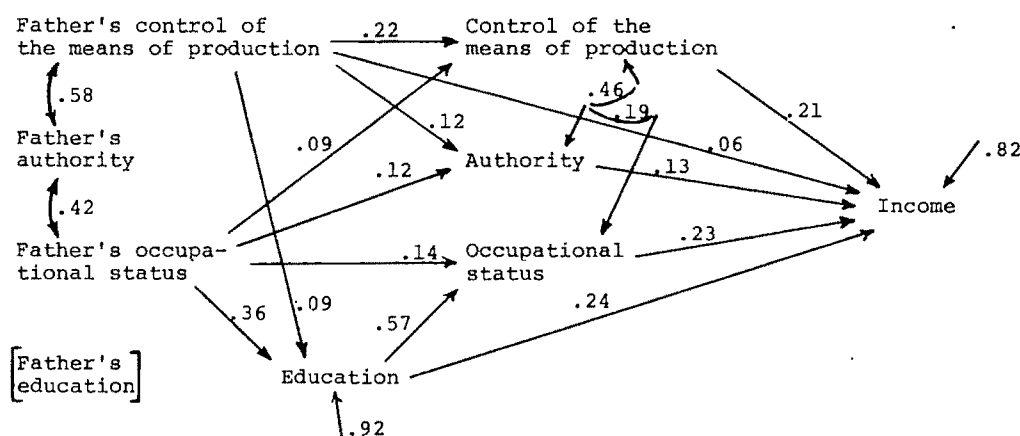
The questions appear to be adequate for preliminary operationalizations of Marx's and Dahrendorf's class schemes, although it must be recognized that they are subjective measures of the individual's position in the work hierarchy and may not always reflect objective position in the hierarchy. Teachers, for example, tended to respond that they supervised

others when apparently they were referring only to their students. Following Wright and Perrone's (1977) suggestion, we have reclassified them as supervising no one. Similarly, a small proportion of persons who responded that they have no supervisor may not actually control the means of production but may instead simply be autonomous workers. Another difficulty is that controllers in the private sector are not distinguished from those in the public sector, a distinction crucial to Marx's conception of class. We therefore have reclassified the very small number of government administrators in our sample as not controlling the means of production.

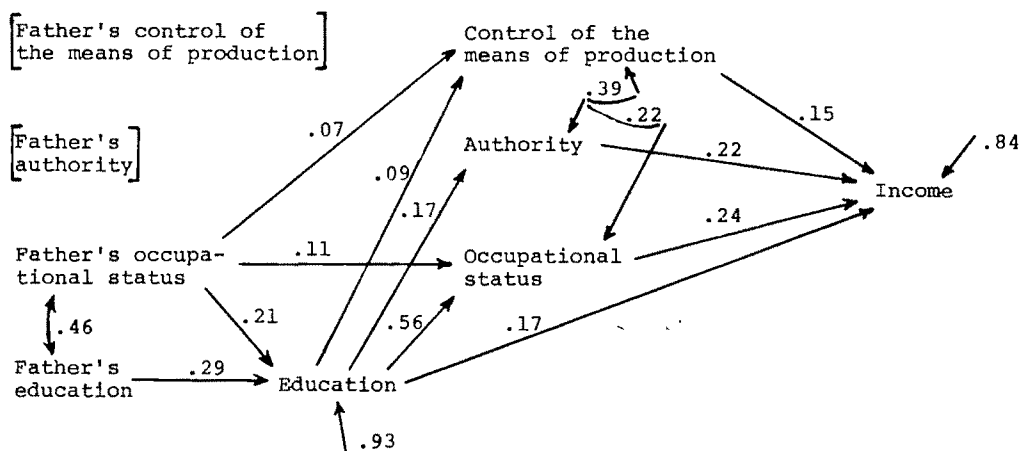
¹⁶ The mean income for men in the petite bourgeoisie (classless group) is \$13,043, compared with \$13,785 for workers and \$21,550 for capitalists in Marx's class model and \$12,147 for obey class members and \$17,476 for command class members in Dahrendorf's scheme.

¹⁷ Only eight dummy variables are used in the analysis, the ninth being implicit in the other eight.

GREAT BRITAIN



UNITED STATES



*Correlations less than .2 are not shown and paths which are not statistically significant are omitted from the model. Variables shown in brackets are not available in the data.

Figure 1. Extension of the Blau-Duncan Model to Include Control of the Means of Production and Authority for Great Britain and the United States Separately; Men Only*

(Farkas, 1976:476) and provides a standard for assessing the explanatory power of the simpler models.

Other measures. Father's and respondent's education are measured in years of schooling. For father's and respondent's occupational status we use Duncan's (1961) SEI index which is essentially an average of income and education for each detailed census occupation.¹⁸ Personal income (available only in the 1974 and 1976 surveys) is job earnings, before taxes or other deductions, for the preceding

year in dollars.¹⁹ To correct for inflation between the two surveys, we converted income to 1975 dollars using the consumer price index (U.S. Bureau of the Census, 1976:433).

Class identification is the respondent's self-assignment to a choice of four classes: lower, working, middle, and upper (following Centers, 1949). Several sociopolitical attitudes also are analyzed. Respondents were asked whether they had

¹⁸ We used the coding procedure in Featherman et al. (1975).

¹⁹ Income was originally coded into twelve categories, ranging from under \$1,000 to \$25,000 or over, and we use the midpoint of each category to convert it into dollars (except for the highest open-ended category which we estimated at \$30,000).

"hardly any confidence at all," "only some confidence," or "a great deal of confidence" in the people running *organized labor*. *Political party identification* ranges in six categories from strong Republican to strong Democrat. *Vote in 1972* is whether the respondent voted for Nixon or McGovern in the 1972 presidential election. *Political attitude* (available only in 1974 and 1976) is self-placement on a seven-point scale of political views from extremely conservative to extremely liberal. Exact wording of the items is given in NORC (1976).

Statistical Methods

We estimate our models by ordinary least squares (OLS) regression methods. These assume that relations among variables are, to a reasonable approximation, linear and additive. There is good evidence that this is a reasonable assumption for variables used in the Blau-Duncan model (e.g., Duncan et al., 1972) and in general (e.g., Middleton, 1973). We will present evidence concerning nonlinearities and interactions involving control and authority and show that the linear approximation is fully adequate.

RESULTS

Description of the American Class Structure

By the Marxian definition, the class structure consists of a small upper class and a much larger lower class, with 11% of

the men being capitalists and 81% workers (see Table 2). By Dahrendorf's definition the upper class is larger and the lower class correspondingly smaller; 44% of the men are in the command class and 48% in the obey class. The remaining 8% are in the marginal group which Marx calls the *petite bourgeoisie* and Dahrendorf defines as classless. There are some interesting sex differences. Women are only half as likely as men to be in Marx's capitalist class, slightly more likely to be workers, and equally likely to be *petit bourgeois*. Women are also less likely than men to exercise authority in the workplace, particularly at higher levels. These sex differences could be due to direct discrimination (e.g., Thurow, 1975:178-9), or to differences in preferences or in socialization (e.g., Mednick et al., 1975), or to some combination of these and other factors; unfortunately our data do not speak to this question.

There is only a modest overlap between class position as defined by Marx and as defined by Dahrendorf, indicating that the two models are empirically as well as conceptually distinct. About one-quarter of Dahrendorf's command class are capitalists by Marx's definition, the remaining three-quarters being workers in Marx's scheme (see Table 2). Put differently, the correlation between control of the means of production and authority is a modest .4, noticeably lower than, for example, the .6 correlation between education and occupational status, the key variables in the Blau-Duncan model.

Table 2. Mean Duncan Socioeconomic Status Scores by Authority and Control of the Means of Production; Percentage of the Total Population in Each Cell Is Given in Parentheses (for U.S. Men and Women Separately; Full-Time Workers Only)

	Dahrendorf: Authority in the workplace							
	Men				Women			
	upper command	lower command	obey	(total)	upper command	lower command	obey	(total)
Marx: Control of the means of production								
Capitalists: control the means of production	61 (5%)	47 (6%)	40 (8%) ¹	53 (11%) ²	44 (1%)	50 (5%) ¹	42 (9%) ¹	49 (6%) ²
Workers: do not control the means of production	52 (12%)	44 (21%)	36 (48%)	40 (81%)	52 (8%)	48 (16%)	41 (61%)	44 (85%)
(total)	55 (17%)	44 (27%)	36 (48%) ²	42 (N=1,120)	51 (9%)	48 (21%)	41 (61%) ²	44 (N=598)

¹ This is the *petite bourgeoisie* in Marx's scheme and the classless group in Dahrendorf's.

² Excludes the *petite bourgeoisie* or classless group.

Class and the Blau-Duncan variables. Neither control of the means of production nor authority is closely related to occupational status. The mean occupational status of each cell in the cross-tabulation of authority and control, given in Table 2, shows little systematic variation. The correlation between occupational status and these alternative concepts of class is quite modest ($\text{Eta} = .3$ for men and $.2$ for women, a figure equal to the multiple correlation between occupational status on the one hand and Marx's and Dahrendorf's classes on the other, with all interactions and nonlinearities in Marx's and Dahrendorf's classifications taken into account). Moreover, neither control nor authority is much associated with education, the correlation being only $.1$ for both.

Class and Income

Controlling the means of production and exercising authority both substantially increase a man's income. Control alone explains 9% of the variance in income, and the continuous version of authority 14%, while both jointly account for 17% of the variance. By way of comparison, education alone explains 13%, occupational status 18%, and both together 20% of the variance in income. Since the Blau-Duncan model is well established in the empirical literature it is perhaps most appropriate, if only on the grounds of parsimony, to consider the amount of variance that the class variables add in addition to that explained by the Blau-Duncan variables. This is a conservative procedure since it assigns the joint variance to the Blau-Duncan variables, but that is not of much practical importance since the joint variance is not large. The basic Blau-Duncan variables explain just under 20% of the variance in men's income in these as in many other data sets (e.g., Duncan et al., 1972), a disquietingly low figure that has led to some perhaps premature speculation on the importance of luck (Jencks et al., 1972; Sahota, 1978:7-9). Simply adding Marx's control of the means of production to the Blau-Duncan variables explains an additional 5% of the

variance while adding authority in Dahrendorf's original dichotomous form is almost equally efficacious and adding our continuous authority measure is noticeably more so (Table 3, lines 2, 3 and 4). In fact, in a model with only our continuous version of authority and the Blau-Duncan variables, authority is the single most important determinant of income.²⁰ When authority and control are both added to the Blau-Duncan variables they increase the explained variance by 9%, almost half again the original figure (line 6), and authority's effect is second in magnitude only to occupational status (Panel C). In metric terms, men in the upper command class earn just under five thousand dollars more than those in the obey class and capitalists earn just under four thousand dollars more than workers (Panel D).

These results are robust under alternative specifications of the model. The same conclusions are reached when one considers the log of income, as is usual in economics, and when various other variables, including labor force experience, are added to the Blau-Duncan model.²¹ Mod-

²⁰ It has a standardized partial regression coefficient of .28 while occupational status, the next most important variable, has a path of .24.

²¹ The variance explained in log income is noticeably lower but the success of the various theories, relative to the baseline model or to each other, is much the same and they together increase the explained variance in men's income by nearly half. Following the nomenclature of Table 3, we have for log income:

Models	United States	
	Men	Women
1. Baseline: Blau-Duncan variables only. $R^2 =$	13.4	19.4
<i>Increases in R^2 by adding:</i>		
2. Marx: control of the means of production	2.2*	0.4
3. Dahrendorf: authority (dichotomous)	3.4*	0.1
4. Improved Dahrendorf: authority (continuous)	4.4*	0.4
5. Marx and Dahrendorf	4.1*	0.7
6. Marx and improved Dahrendorf	4.9*	1.1
7. Maximum: all interactions, etc.	5.4*	1.9

Since our primary interest is in comparing the class and status models rather than in explaining the

Table 3. Consequences of Control of the Means of Production and of Authority for Personal Income (Separately for British Men and U.S. Men and Women)

	United States		Great Britain
	Men	Women	Men
<i>Panel A. Percent of variance explained, R²</i>			
1. Baseline: minimum Blau-Duncan model with father's education and occupational status, education, and occupational status ¹	19.9	26.6	23.7
<i>Panel B. Additional percent of variance explained by adding the indicated variables to baseline model 1</i>			
2. Marx: control of the means of production	5.2*	0.0	7.9*
3. Dahrendorf: authority (dichotomous)	4.6*	0.1	5.3*
4. Improved Dahrendorf: authority (continuous)	7.0* ^a	0.4*	—
5. Marx and Dahrendorf: control and authority (dichotomous) ²	7.1* ^b	0.1	9.3* ^b
6. Marx and improved Dahrendorf: control and authority (continuous)	8.9* ^c	0.5	—
7. Maximum: add full detail and all possible nonlinearities and interactions of control and authority ³	9.2*	2.2	10.0*
<i>Panel C. Standardized partial regression coefficients for model 6 (U.S.) or 5 (G.B.)</i>			
Marx: control of the means of production	.150* ^d	-.007	.225*
Dahrendorf: authority ⁴	.218* ^d	.070*	.133*
Father's education	-.048	-.042	—
Father's occupational status	.004	-.024	.012
Education	.184* ^d	.341*	.250*
Occupational status	.236*	.251*	.234*
<i>Panel D. Metric partial regression coefficients for model 6 (U.S.) or 5 (G.B.)</i>			
Marx: control of the means of production (1=capitalist)	\$3,967* ^d	-\$155	£1,265*
Dahrendorf: authority (1=upper command class in U.S.; command class in Britain) ⁴	\$4,816* ^d	\$1,148*	£446*

* Increment in R² over model 1 is statistically significant at p<.05 or partial regression coefficient significantly greater than zero at p<.02.

¹ Father's education is not available in Britain.

² Wright and Perrone's model necessarily explains the same variance as this model.

³ Dummy variables (eight for U.S., three for Britain) representing the cells in the cross-tabulation of authority and control. See text for details.

⁴ Continuous version in the U.S. In Britain only the dichotomous version is available.

^{a, b, c} The R² for the higher numbered model is significantly greater than that for the lower numbered model(s) at p<.05. The comparisons are: a-model 4 vs. 3; b-5 vs. 2 and 5 vs. 3; c-6 vs. 2 and 6 vs. 4.

^d Difference between men's and women's regression coefficients is significant at p<.05.

maximum possible variance in income, we have not confounded this comparison by introducing additional control variables. However, when we include the additional variables suggested by Treiman and Terrell (1975a), we find that both authority and control of the means of production remain significant determinants of men's income, increasing the variance explained by 5% from 37 to 42%:

Models

1. Baseline: Blau-Duncan variables plus siblings, hours worked per week, experience, experience squared, children under six, and children aged six to seventeen. R² =

United States
Men Women

36.8 31.3

Increases in R² by adding:

2. Marx: control of the means of production	2.4*	0.0
3. Dahrendorf: authority (dichotomous)	2.4*	0.0
4. Improved Dahrendorf: authority (continuous)	4.1*	0.2
5. Marx and Dahrendorf	3.5*	0.0
6. Marx and improved Dahrendorf	4.9*	0.2
7. Maximum: all interactions, etc.	5.3*	2.4

In our preferred Model 6, work experience (beta=.39 for experience and -.27 for experience squared) and education (.25) are the most important determinants with authority (.19) sharing third place with occupational status (.17), and control of the means of production (.10) coming next.

ifying Marx in a way analogous to our modification of Dahrendorf does not change the results; a trichotomous version of Marx's model which makes further distinctions between workers one level below the top of the hierarchy and those more than one level below the top explains no more of the variance in either men's or women's incomes. Moreover, virtually all of the influence of authority and control is captured by the postulated linear and additive effects. Adding all possible detail, interactions, and nonlinearities increases the explained variance by less than a third of 1%, an entirely insignificant figure (compare lines 6 and 7).

We conclude that our analysis of class and income is supported by the data for American men, with our improved version of Dahrendorf's authority being more important than either Dahrendorf's dichotomous authority model or Marx's control of the means of production.

Women's income. For women, quite unlike men, neither controlling the means of production nor exercising authority offers any clear monetary rewards. Exercising authority has an effect in the predicted direction but it is small (line 4). In metric terms, being at the top of the authority hierarchy is worth something over a thousand dollars in additional income for women, less than a quarter of the figure for men (Panel D). Belonging to Marx's capitalist class has no significant effect on a woman's income (line 2 and Panel C). In metric terms, women seem to lose just under two hundred dollars by being capitalists while men, in contrast, gain almost four thousand. The difference between the large rewards men receive from exercising authority and controlling the means of production and the small or nonexistent rewards which accrue to women is striking and statistically significant. These results are not in accord with the predictions of Marx or Dahrendorf, or with our analysis of the link between class and income.

Our findings have implications for previous analyses of sex differences in income. A variety of studies show that women earn less than men (e.g., Featherman and Hauser, 1976; Mincer and

Polachek, 1974; Treiman and Terrell, 1975a). Since women are less likely than men to be capitalists or to exercise authority in the workplace, it has been suggested that this may account for some of the male-female income difference (Fligstein and Wolf, 1978). Our data suggest that the fundamental problem is that women do not receive the pay men do even when they do obtain capitalist and supervisory positions. It is not simply the modest differences in the *distribution* of class positions, but the sharp differences in the *process* whereby these positions are converted into earnings that are responsible for some of the sex difference in earnings. Using the regression standardization procedure suggested by Duncan (1968a), we find that sex differences in the distribution of control of the means of production and authority account for only 2% of the gap between men's and women's average income while differences in the process of converting control and authority into earnings account for 14% of this gap. Taking both of these differences into account explains fully 25% of the gap between men's and women's earnings.²²

Our data allow a limited examination of the reasons for this. First, occupations which make up the upper classes in Marx's scheme are rather different for men and women in ways which suggest that the firms women control may be less profitable than those men control. The largest groups among male capitalists are managers and administrators (39%), farmers (8%), lawyers (6%), and insurance agents (6%), while the largest groups among women capitalists are managers

²² A predicted mean income for women standardized for sex differences in the distribution of control and authority was obtained by substituting the male means for these two variables into the female regression equation. A prediction controlling for differences of process was arrived at by substituting the male unstandardized regression coefficients (i.e., b's) associated with control and authority for the female coefficients in the same equation, and a prediction taking differences of both distribution and process into account was obtained by substituting both the male means and regression coefficients for control and authority in the female equation. For an analysis of the male-female income gap which takes into account control of the means of production, authority, and other variables see Roos (1978).

and administrators (20%), registered nurses (11%), restaurant, bar, and cafeteria managers (9%), clerical supervisors (6%), and cooks (6%). Moreover, women in Dahrendorf's command class may hold less important supervisory positions than do men. Among men, the largest groups comprising the command class are managers and administrators (19%) and foremen (6%), while among women the largest groups comprising this class are secretaries (11%), registered nurses (9%), managers and administrators (9%), and bookkeepers (5%). Furthermore, women are less likely than men to supervise at higher levels, as we have seen (Table 2). Finally, women capitalists appear to control smaller firms than men do. Only one out of six firms controlled by women have more than two levels of command while almost half of those controlled by men are this large.

REPLICATION AND EXTENSION: DATA FROM GREAT BRITAIN

We present here an analysis of data from Great Britain which serves three purposes. First, we show that the results we have presented for income (and will later present for class consciousness and politics) are not unique to the United States, a most unusual society in many ways, but appear in another advanced industrial society as well. Second, we compare the effects of class and status on income and class consciousness in the United States and Great Britain. Third, we present for Britain some evidence on the transmission from generation to generation of class position as defined by Marx and Dahrendorf.

Since Tocqueville wrote *Democracy in America* more than a century ago, observers on both sides of the Atlantic have seen American society as open and egalitarian in contrast to class-bound and inegalitarian Britain. Marx (1867a:449) refers to Britain as the "classic ground" of capitalism and based his abstract model of class largely on it (Giddens, 1973). In contrast, he sees the United States as lacking a strong consciousness of class since classes there "have not yet become fixed but continually change and interchange

their elements" (1852:444). Dahrendorf (1959:275) predicts that industrial class affiliations will generally have little consequence for political attitudes in industrial societies but makes an exception for Britain, where he expects a high correlation between class and politics. Recent research on stratification (Treiman and Terrell, 1975b), class consciousness and voting (Alford, 1963; Rose and Urwin, 1969), and subjective aspects of stratification (Bell and Robinson, 1978; Robinson and Bell, 1978) make similar points. In part because of these differences, research in the U.S. almost exclusively emphasizes continuous measures of status or prestige while British research tends to stress categorical class divisions (e.g., Blau and Duncan, 1967; Treiman and Terrell, 1975a in the U.S., and Goldthorpe and Llewellyn, 1977; Westergaard and Resler, 1975, in Britain).²³ By comparing status and class models we will be able to see whether this difference in emphasis is appropriate and what is lost by emphasis on one model to the exclusion of the other.

Data. The British data are from a representative national survey conducted by Butler and Stokes (1969) of the populations of England, Scotland, and Wales, aged 20 or over. We restrict our analysis to the 686 men in 1964 who were gainfully employed. We have not been able to analyze working women in Britain because the number of cases is very small and the data do not allow us to make the crucial distinction between full-time and part-time workers.

So far as possible we have defined variables in the British data so as to be comparable with those in the U.S. data but, where necessary, we have used measures which are appropriate to each country, so

²³ Obviously there are exceptions to these one-sided views, especially among the theoretical traditions in both countries but also in the quantitative traditions. Ironically, the class measures employed by British researchers may in fact reflect a status dimension. For example, the social class measure of the British Registrar General's Office, often employed by British sociologists, is only very slightly correlated with class in Marx's sense (.32) or in Dahrendorf's (.22) and far more resembles occupational status ($r = .79$) or prestige ($r = .66$).

as to do justice to the idiosyncracies of each stratification system.²⁴ Additional analyses using identical stratification measures in the two countries resulted in essentially the same substantive conclusions as those reported below.

Income

The British data clearly corroborate our results on income in the U.S. Control of the means of production has a strong effect on income, as large as that of education or occupational status, while authority has an appreciable and statistically significant, albeit smaller, effect (see the last column of Table 3).²⁵ Taken together, control and authority increase the variance explained by the traditional Blau-Duncan variables from 24 to 33%, an increase of nearly half. It is noteworthy that Marx's control, when it alone is added to the Blau-Duncan variables, is the single most important determinant of income

and when entered with authority is very nearly as important as education and occupational status (Panel C). Control of the means of production is more important than authority in Britain, although the comparison is problematic since the British data lack the continuous measure of authority which we have shown to be superior in the U.S. In all, the great importance of control of the means of production may indicate that, as Marx (1867a:449) assumes, Britain is more of a classical capitalist society than the U.S.

Family Background and Class Position

Having shown that acquiring control over the means of production and exercising authority in the workplace have important consequences for income inequality, we now look briefly at their causes, in particular the extent to which advantages are handed on from parent to child. The British results in Figure 1 suggest that there are two more or less distinct processes by which advantage is passed on from one generation to the next, one a *status* system centering on education and occupational status and the other a *class* system centering on control of the means of production and authority. Having a father who controls the means of production appreciably increases a son's chances of controlling them himself. Fathers probably hand over the family farm or business or provide investment capital. Having a father with high occupational status also confers a small but statistically significant advantage. Family background also tells in getting into the command class. Having a father in the command class makes no significant difference to a son's chance of getting into that class but it does help to have a father who controls the means of production or has high occupational status. In all, contrary to what Marx and many others have assumed, class position does not appear to depend much on family background. Only 2% of the variance in control and 1% in authority is explained by family background. In this sense, the class system is less rigid than the status system, in which family background explains 15% of the variance in education and almost 13% in occupational status.

²⁴ To take into account peculiarities of the British educational system, education is coded as in Treiman and Terrell (1975b:567-72, 580-1). Lacking a socioeconomic index for Britain, we coded son's (and father's) occupational status according to the son's weights from a canonical procedure using father's occupation (dummy-coded), education, and income as the criteria (for details see Kelley et al., 1977). The same substantive conclusions as those discussed in text were arrived at using Treiman's (1977) standard international prestige scores (Robinson, 1978). Control of the means of production and authority are operationalized in a manner identical to our classification in the U.S. except that only a dichotomous version of authority is available. Personal income ranges in thirteen categories from less than £250 to over £1,950 and we converted this metric to pounds using the midpoint of categories (except for the highest open-ended category which was estimated at £2,852). The attitudinal variables are similar to those available in the U.S. data. Class identification is self-assignment to a choice of the middle or working class. For political party identification and vote in 1964 (the most recent election), Labour supporters are scored one, Liberals two, and Conservatives three. Political attitudes are measured by self-placement on a three-point left/right continuum. Details are available on request.

²⁵ Control of the means of production and the dichotomous measure of authority jointly explain 14% of the variance in men's income compared with 24% for the Blau-Duncan variables. Judging from the U.S. results, if a continuous version of authority were available, the variance explained by the class variables would probably be even closer to that explained by the Blau-Duncan variables.

The difference is not so much in the *direct* effects of father's status and control of the means of production, both probably having largely to do with wealth and property (Kelley, 1978), but in the *indirect* effects via education. (Father's occupational status has a substantial effect on his son's education and so indirectly on his son's occupational status; fathers with high status jobs manage to get their sons more education and that in turn allows the sons to get high status jobs.) But father's control of the means of production has only a small effect on education and father's authority has virtually none. At the same time son's education has no appreciable effect on his control or authority, so there are no indirect effects in the British class system.

Our U.S. data do not include measures of father's control or authority, but as far as we can tell from the data that are available, the American situation is not dissimilar to the British. Coming from a family with high occupational status confers a modest direct advantage in gaining access to privileged positions in Marx's sense. Furthermore, coming from a family with high educational or high occupational status confers a modest indirect advantage since it leads to more education which, in the U.S., helps in gaining control of the means of production and especially in gaining positions of authority. But in all, coming from a high status family, in the U.S. as in Britain, confers only a modest advantage in control or authority. How-

ever, judging from the British data, it is not unlikely that coming from a family that controls the means of production confers a more substantial advantage. A more detailed cross-national analysis is presented elsewhere (Robinson, 1978; see also Kelley, 1978).

Class Consciousness and Politics

The limitations of our data and the imprecision of some of Marx's and Dahrendorf's conceptions preclude a complete test of their theories of class consciousness and politics. Nevertheless, we can perform limited but useful tests of, first, the extent to which objective class position leads to a sense of awareness of belonging to a particular class; second, the extent to which it leads to a subjective perception of having interests which are different from (and possibly in conflict with) those of other classes; and third, the effect it has on political attitudes and behavior.

Class identification. Education, occupation, and income long have been recognized as important determinants of class identification (Centers, 1949), and more recent research in both the U.S. and Britain confirms their importance (e.g., Hodge and Treiman, 1968; Runciman, 1966). None of these studies, however, has examined the effect of objective class position in either Marx's or Dahrendorf's sense. We present the results of such an analysis in Table 4.

Table 4. Effects of Control and Authority¹ on Class Identification and Political Attitudes (Increments in the Proportion of Variance Explained [R^2] over That Explained by the Blau-Duncan Model;² Separately for British Men and U.S. Men and Women)

Dependent Variable	British Men			U.S. Men			U.S. Women		
	Control	Authority	Control & Authority	Control	Authority	Control & Authority	Control	Authority	Control & Authority
<i>Class</i>									
Identification	1.8*	0.9*	2.0*	0.7*	0.9*	2.0*	0.0	0.1	0.1
<i>Political Attitudes</i>									
Confidence in labor	—	—	—	1.5*	0.2	1.6*	1.9*	0.4	1.9*
Political party	2.1*	1.6*	2.5*	0.4*	0.1	0.4	1.8*	0.4	1.8*
Vote	2.4*	2.1*	3.1*	0.0	0.1	0.2	1.0*	0.4	1.1*
Political attitudes	0.3	1.6*	1.6*	0.4	0.4	0.6	0.1	0.0	0.1

* Increment in R^2 over the Blau-Duncan model is statistically significant at $p < .05$.

¹ Continuous version in the U.S. In Britain only the dichotomous version is available.

² Includes father's education and occupational status, respondent's education and occupational status in the U.S.; father's education is unavailable in Britain.

Among British men, the importance of both Marx's and Dahrendorf's class concepts is reasonably clear, although they are somewhat less important than occupational status (not shown in the Table to conserve space). Both capitalists and command class members are more likely to identify with the middle class, as predicted (Table 4, row 1). Somewhat under a third of the effects of both control and authority are indirect through income. This finding is consistent with Marx (1867b:708-9; Marx and Engels, 1848:22ff), who argues that disparities in wealth (together with other factors) lead to the development of revolutionary consciousness among workers, and with Dahrendorf (1959:216-7, 242), who argues that latent interests are more likely to become manifest when authority classes are superimposed on economic inequalities. Control of the means of production is more important in Britain than in the U.S., indicating here, as for income inequality, the greater salience of the class structure in Britain.

Among American men, both Marx's and Dahrendorf's class models are significant determinants of class identification, although their effects are small relative to the sizeable effect of occupational status (not shown in the Table to conserve space), indicating that Americans are more attuned to status than to class distinctions. Consistent with both Marx and Dahrendorf, about half of the effect of both class variables is indirect through income. However, contrary to prediction, among U.S. women neither control nor authority has any effect on subjective class identification. This may be in part because there is no indirect effect through income, since women do not earn much more when they get into the capitalist or command classes, or because they stress their husband's characteristics more than their own (e.g., Ritter and Hargens, 1975; Rossi et al., 1974:178).

For class identification and the political variables we will consider below, unlike income, our continuous version of authority was no better than Dahrendorf's dichotomous version, although it was no worse (indeed, the results are so close that we have shown only the continuous ver-

sion in Table 4). On the whole it appears that our modification of Dahrendorf gives a quite plausible account of the link between class and income but offers little new insight into the effects that objective class position has on class consciousness and class conflict.

Political attitudes and affiliations. Marx's (1871:388; Marx and Engels, 1848:24; 1885:106-17) arguments that "every class struggle is a political struggle" and that progressive political parties are the advance troops of the revolution have been so influential that it frequently has been assumed that the political struggle is mainly a struggle between classes (e.g., Alford, 1963:38; Lipset, 1960:234). There is, however, hardly any evidence on Marx's theory since virtually no empirical studies use class in his sense, although numerous studies have employed a manual/nonmanual dichotomy, or prestige, or status (Knoke, 1976:62). In contrast to Marx, Dahrendorf (1959:272-6) argues that in "post capitalist society" there has developed an "institutionalization of industry" and an "isolation of industrial conflict" from political conflict with the result that "the participants of industry, upon leaving the factory gate, . . . leave behind their industrial class interests. . . ." He concludes that in most modern societies industrial class membership will have no effect on political attitudes or behavior. However, he does make an exception for Britain, where he expects a fairly high correlation between class and politics because of the high politicization of the labor movement there.

In Britain, consistent with Marx's and Dahrendorf's expectations, class has an appreciable influence on politics (see Table 4). British capitalists are significantly more likely than workers to identify with the Conservative party and to have voted Conservative in the most recent election, although they are no more apt to claim to have conservative political attitudes. Command class members are significantly more likely than obey class members to identify with the Conservative party, to have voted Conservative, and to view themselves as politically to the right. Virtually none of these class effects is attributable to the fact that

capitalists or command class members have higher incomes.

Leaving aside the special British case, Marx and Dahrendorf have conflicting expectations as to the politicizing effects of class position and our U.S. data support both theorists. This is, of course, only possible because their conceptions of class differ. Whereas authority in the workplace has virtually no politicizing effect for either men or women, control of the means of production influences the political stances of both sexes. American capitalists are slightly but significantly more likely to lack confidence in labor leaders and to oppose the Democratic party, the presumed vehicle of their opponents' interests in a Marxian class struggle. These differences are particularly marked among women, for whom control of the means of production is second only to father's education as a predictor of party identification. Women capitalists are also significantly more likely than women workers to have voted Republican in the 1972 presidential election, although class position made no difference in the electoral choice of men or in the perceived liberalism of either men or women. Few, if any, of these political differences come about because capitalists earn more than workers.

Our analysis of the class bases of class consciousness and politics is necessarily preliminary and suggestive, based as it is upon attitudinal measures which are not fully adequate to the task of measuring Marx's and Dahrendorf's theoretical constructs (see, for example, Hazelrigg, 1973) and are subject to substantial random measurement error. The small increments in variance explained may reflect the inadequacy of the measures employed. The conventional Blau-Duncan status variables do not explain much variance in politics either—only about 6% on average, compared with over 20% in income. Thus the modest increments from adding class variables represent a sizable improvement in prediction. In sum, our analysis is suggestive of a significant but far from dramatic link between class and politics, but we must await the development of better measures for the final word on this.

CONCLUSION

Our analysis suggests that the United States and Great Britain have not one but two distinct stratification systems. Each consists of two separate components. Marx's control of the means of production and Dahrendorf's exercise of authority in the workplace are the central features of the class system which stems from the hierarchical organization of work; education and occupational status are at the core of the status system which is the focus of the Blau-Duncan paradigm. Class and status analyses are based on different theoretical premises, and the two stratification systems are only loosely related, with advantage being passed on from one generation to the next mainly within rather than between them. Both components of each system have important consequences, primarily for income and secondarily for class identification and politics.

In the United States and Great Britain, both control of the means of production and authority have large and statistically significant independent effects on men's income, increasing by half again the variance explained by status variables. The income of American women, in contrast, is little influenced by class, a difference which explains a substantial part of the male-female income gap.

The authority component of the class system is, we suggest, best viewed not as a simple dichotomy, as Dahrendorf would have it, but as a continuum. Because they have more power to set salaries, greater responsibility, and higher marginal productivity, first line supervisors will earn more than the ordinary workers who are subordinate to them. But for the same reasons, those who supervise first line supervisors will, in turn, earn more than *their* subordinates, and so on. Each level of the authority hierarchy will thus, we argue, earn more than the levels below it. The data for American men support our claim. Our continuous version of authority explains significantly more variance in income than Dahrendorf's dichotomy, indicating that there are important income differences within the command class.

The effects of the two class variables on class identification and politics are all in the predicted direction and most are statistically significant, although small. The American public appears to exhibit a limited form of class consciousness, with control of the means of production creating some political differences. As both Marx and Dahrendorf predict, class is more salient for British men, with those who control the means of production or exercise authority in the workplace being more likely to identify with the middle class and to support the Conservative party.

There are two major traditions of research on stratification. The class tradition, based originally on Marx's work and extended by Dahrendorf, focuses on control of the physical means of production and authority over the labor of others, and emphasizes the conflict and inequality that inevitably results from the hierarchical organization of work. The status tradition, which led ultimately to the Blau-Duncan paradigm, stresses open and competitive acquisition of educational skills and occupational status. Researchers working within each tradition have generally ignored the other; many British researchers, for example, emphasize class while most American research focuses on status. The two systems described by these traditions are loosely related, but they are by no means identical, and neither can be safely ignored. Position in one system is only modestly correlated with position in the other and empirically each has significant effects, independent of the other, on income, class consciousness, and politics in both the United States and Great Britain. A one-sided approach focusing exclusively on either system, thus, seems both unwise and unnecessary. For this reason we have taken this first step toward a merger of the class status traditions.

REFERENCES

- Alford, Robert R.
1963 *Party and Society: The Anglo-American Democracies*. Chicago: Rand McNally.
- Atkinson, Anthony B.
1975 *The Economics of Inequality*. London: Oxford.
- Baran, Paul A. and Paul M. Sweezy
1966 *Monopoly Capital*. New York: Monthly Review Press.
- Becker, Gary S.
1965 *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. New York: National Bureau of Economic Research.
- Bell, Wendell and Robert V. Robinson
1978 "An index of evaluated equality: measuring conceptions of social justice in England and the United States." Pp. 235-70 in R. F. Tomasson (ed.), *Comparative Studies in Sociology: An Annual Compilation of Research*, Vol. 1. Greenwich: Jai.
- Blau, Peter M. and Otis Dudley Duncan
1967 *The American Occupational Structure*. New York: Wiley.
- Burawoy, Michael
1977 "Social structure, homogenization and the process of status attainment in the United States and Great Britain." *American Journal of Sociology* 82:1031-42.
- Butler, David and Donald Stokes
1969 *Political Change in Britain: Forces Shaping Electoral Choice*. New York: St. Martin's.
- Centers, Richard
1949 *The Psychology of Social Classes: A Study of Class Consciousness*. New York: Russell and Russell.
- Crowder, N. David
1974 "A critique of Duncan's stratification research." *Sociology* 8:19-45.
- Dahrendorf, Ralf
1959 *Class and Class Conflict in Industrial Society*. Stanford: Stanford University Press.
1967 *Conflict after Class*. London: Longmans, Green.
- Doeringer, Peter B. and Michael J. Piore
1971 *Internal Labor Markets and Manpower Analysis*. Lexington: Heath.
- Domhoff, G. William
1967 *Who Rules America?* Englewood Cliffs: Prentice Hall.
- Duncan, Otis Dudley
1961 "A socioeconomic index for all occupations." Pp. 109-38 in A. J. Reiss, Jr. with O. D. Duncan, P. K. Hatt, and C. C. North (eds.), *Occupations and Social Status*. Glencoe: Free Press.
1968a "Inheritance of poverty or inheritance of race?" Pp. 85-110 in D. P. Moynihan (ed.), *On Understanding Poverty: Perspectives from the Social Sciences*. New York and London: Basic Books.
1968b "Social stratification and mobility: problems in the measurement of trend." Pp. 601-72 in E. B. Sheldon and W. E. Moore (eds.), *Indicators of Social Change*. New York: Russell Sage.
- Duncan, Otis Dudley, David L. Featherman, and Beverly Duncan
1972 *Socioeconomic Background and Achievement*. New York: Seminar Press.
- Farkas, George
1976 "Education, wage rates, and the division of

- labor between husband and wife." *Journal of Marriage and the Family* 38:473-94.
- Featherman, David L. and Robert M. Hauser
1976 "Sexual inequalities and socioeconomic achievement in the U.S., 1962-1973." *American Sociological Review* 41:462-83.
- Featherman, David L., M. Sobel, and D. Dickens
1975 "A manual for coding occupations and industries into detailed 1970 categories and a listing of 1970 basic Duncan socioeconomic and NORC prestige scores." Center for Demography and Ecology, University of Wisconsin, Madison.
- Fligstein, Neil and Wendy Wolf
1978 "Sex similarities in occupational status attainment: are the results due to the restriction of the sample of women to employed women?" *Social Science Research* 7:197-212.
- Fox, William S., David E. Payne, Thomas B. Preist, and William W. Philliber
1977 "Authority position, legitimacy of authority structure, and acquiescence to authority." *Social Forces* 55:966-73.
- Giddens, Anthony
1973 *The Class Structure of the Advanced Societies*. New York: Barnes and Noble.
- Goldthorpe, John H.
1976 "Mobilité sociale et intérêts sociaux." *Sociologie et Sociétés* 8:7-36.
- Goldthorpe, John H. and C. Llewellyn
1977 "Class mobility: intergenerational and worklife patterns." *British Journal of Sociology* 28:269-302.
- Griliches, Zvi
1977 "Estimating the returns to schooling: some econometric problems." *Econometrica* 45:1-22.
- Hazelrigg, Lawrence E.
1972 "Class, property, and authority: Dahrendorf's critique of Marx's theory of class." *Social Forces* 50:473-87.
- 1973 "Aspects of the measurement of class consciousness." Pp. 219-47 in M. Armer and A. D. Grimshaw (eds.), *Comparative Social Research: Methodological Problems and Strategies*. New York: Wiley.
- Hodge, Robert W., and Donald J. Treiman
1968 "Class identification in the United States." *American Journal of Sociology* 73:535-47.
- Jencks, Christopher, Marshal Smith, Henry Acland, Mary Jo Bane, David Cohen, Herbert Gintis, Barbara Heyns, and Stephan Michelson
1972 *Inequality: A Reassessment of the Effect of Family and Schooling in America*. New York: Basic Books.
- Kelley, Jonathan
1978 "Wealth and family background in the occupational career: theory and cross-cultural data." *British Journal of Sociology* 29:94-109.
- Kelley, Jonathan, Herbert S. Klein and Robert V. Robinson
1977 "Inequality and social mobility: theory and data from a peasant society." Paper read at the annual meeting of the American Sociological Association, Chicago.
- Knoke, David
1976 *Change and Continuity in American Politics: The Social Bases of Political Parties*. Baltimore: John Hopkins University Press.
- Kolko, Gabriel
1962 *Wealth and Power in America*. New York: Praeger.
- Lipset, Seymour Martin
1960 *Political Man: The Social Bases of Politics*. Garden City: Doubleday.
- Lopreato, Joseph
1968 "Authority relations and class conflict." *Social Forces* 47:70-9.
- Lydall, Harold F.
1968 *The Structure of Earnings*. Oxford: Clarendon Press.
- Marx, Karl
[1849] *Wage-Labour and Capital*. New York: International Publishers.
[1852] *The eighteenth brumaire of Louis Bonaparte*. Pp. 436-525 in R. Tucker (ed.), *The Marx-Engels Reader*. New York: Norton.
[1867a] "Preface to the first: German edition of Capital." Pp. 448-52 in Marx and Engels, *Selected Works*, Vol. 1. Moscow: Foreign Languages Publishing House.
[1867b] *Capital: A Critique of Political Economy*. Vol. 1. Chicago: Kerr.
[1871] "General rules of the International Working Men's Association." Pp. 386-9 in Marx and Engels, *Selected Works*, Vol. 1. Moscow: Foreign Languages Publishing House.
[1893] *Capital: A Critique of Political Economy*. Vol. 3. Moscow: Foreign Language Publishing House.
[1902] "Die moralisierende Kritik und die kritische Moral." Pp. 27-54 in Mehring (ed.), *Aus dem literarischen Nachlass von Karl Marx and Friedrich Engels*. Stuttgart: Dietz.
- Marx, Karl and Friedrich Engels
[1848] *The Communist Manifesto*. New York: Pathfinder Press.
[1885] "Address of the Central Committee to the Communist League." Pp. 106-17 in Marx and Engels, *Selected Works*, Vol. 1. Moscow: Foreign Languages Publishing House.
[1932] *The German Ideology*. Pts. 1 and 2. New York: International Publishers.
- Mednick, Martha T. S., Sandra S. Tangri, and Lois W. Hoffman (eds.)
1975 *Women and Achievement: Social and Motivational Analyses*. New York: Wiley.
- Middleton, Russell
1973 "Do Christian beliefs cause anti-Semitism?" *American Sociological Review* 38:33-52.
- Mills, C. Wright
1957 *The Power Elite*. New York: Oxford University Press.
- Mincer, Jacob
1974 *Schooling, Experience, and Earnings*. New York: Columbia University Press.
- Mincer, Jacob and Solomon Polachek
1974 "Family investments in human capital: earnings of women." *Journal of Political Economy* 82:S76-108.

- National Opinion Research Center
1972- Codebook for the Spring 1972 (1973, 1974, 1976 1976) General Social Survey. Chicago: National Opinion Research Center.
- Nichols, Theo
1969 *Ownership, Control and Ideology*. London: Allen and Unwin.
- Rees, Albert
1973 *The Economics of Work and Pay*. New York: Harper.
- Ritter, Kathleen V. and Lowell L. Hargens
1975 "Occupational positions and class identifications of married working women: a test of the asymmetry hypothesis." *American Journal of Sociology* 80:934-48.
- Robinson, Robert V.
1978 "Ownership of the means of production, authority, and prestige: a cross-national study of class and status mobility." Paper read at the annual meeting of the American Sociological Association, San Francisco.
- Forth- Ownership, Authority, and Prestige in coming Comparative Perspective. Ph.D. dissertation in progress, Department of Sociology, Yale University.
- Robinson, Robert V. and Wendell Bell
1978 "Equality, success, and social justice in England and the United States." *American Sociological Review* 43:125-43.
- Roos, Patricia A.
1978 "Sexual stratification in the workplace: male-female differences in economic returns to occupation." Paper read at the annual meeting of the American Sociological Association, San Francisco.
- Rose, Richard and Derek Urwin
1969 "Social cohesion, political parties and strains in regimes." *Comparative Political Studies* 2:7-67.
- Rossi, Peter H., William A. Sampson, Christine E. Bose, Guillerma Jasso and Jeff Passel
1974 "Measuring household social standing." *Social Science Research* 3:169-90.
- Runciman, W. G.
1966 *Relative Deprivation and Social Justice: A Study of Attitudes to Social Inequality in Twentieth-Century England*. Berkeley: University of California Press.
- Sahota, Gian Singh
1978 "Theories of personal income distribution: a survey." *Journal of Economic Literature* 16:1-55.
- Stinchcombe, Arthur L. and T. Robert Harris
1969 "Interdependence and inequality: a specification of the Davis-Moore theory." *Sociometry* 32:13-23.
- Thurow, Lester C.
1975 *Generating Inequality: Mechanisms of Distribution in the U.S. Economy*. New York: Basic Books.
- Treiman, Donald J.
1977 *Occupational Prestige in Comparative Perspective*. New York: Academic.
- Treiman, Donald J. and Kermit Terrell
1975a "Sex and the process of status attainment: a comparison of working women and men." *American Sociological Review* 40:174-200.
1975b "The process of status attainment in the United States and Great Britain." *American Journal of Sociology* 81:563-83.
- Turner, Jonathan H.
1973 "From utopia to where? a strategy for reformulating the Dahrendorf conflict model." *Social Forces* 52:236-44.
- U.S. Bureau of the Census
1976 *Statistical Abstract of the United States*. 97th ed. Washington, D.C.: U.S. Government Printing Office.
- Weingart, Peter
1969 "Beyond Parsons? a critique of Ralf Dahrendorf's conflict theory." *Social Forces* 48:151-65.
- Westergaard, John and Henrietta Resler
1975 *Class in a Capitalist Society: A Study of Contemporary Britain*. London: Heinemann.
- Wright, Erik Olin
1976 "Class boundaries in advanced capitalist societies." *New Left Review* 98:3-41.
- Wright, Erik Olin and Luca Perrone
1977 "Marxist class categories and income inequality." *American Sociological Review* 42:32-55.
- Zeitlin, Maurice
1974 "Corporate ownership and control: the large corporation and the capitalist class." *American Journal of Sociology* 79:1073-119.

APPENDIX
Correlations, Means and Standard Deviations; Separately for U.S. Men (above Diagonal) and Women (below Diagonal) in the 1973, 1974 or 1976
NORC General Social Surveys (Full-Time Workers Only; Decimals Omitted)

Variables ¹	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Marx: control		402	401	053	103	-088	111	164	288	152	149	093	058
2. Authority (dichot.)	376		906	048	083	-070	144	238	310	190	068	080	062
3. Authority (cont.)	319	923		054	071	-079	174	277	374	215	089	079	056
4. Father's education	072	035	094		461	-384	384	237	101	217	058	181	-022
5. Fa's occup. status	012	056	085	540		-276	344	307	149	219	085	130	-106
6. Number of siblings	-036	-086	-102	-357	-295		-256	-203	-091	-132	-101	-112	-025
7. Education	026	089	113	433	369	-228		600	364	399	136	165	-068
8. Occup. status	045	162	162	275	288	-276	592		422	408	156	194	003
9. Personal income	043	106	141	168	157	-127	470	445		370	098	171	129
10. Class identifi.	036	066	072	201	206	-173	254	282	231		116	188	015
11. Conf. in labor	149	080	083	033	069	-014	038	116	124	006		152	161
12. Party ID	136	072	073	175	115	-119	030	082	055	125	130		274
13. Political attitude	031	011	-015	-062	-109	148	-095	-003	-101	-065	031	124	
Means													
Men	.11	.44	.30	9.0	32	4.0	12.7	42	14613	2.5	2.1	2.5	4.0
Women	.06	.29	.19	9.8	35	4.0	12.5	44	7942	2.4	2.2	2.3	3.9
Std. Devs.													
Men	.31	.50	.38	4.2	22	3.3	3.3	24	8350	.59	.66	1.9	1.3
Women	.23	.46	.32	4.1	23	3.2	2.7	21	5190	.55	.62	1.8	1.3

¹ Selected variables only; the full correlation matrix, too large to reproduce here, is available on request.
N=1,120 for men and 598 for women.

OVERCROWDING IN THE HOME: AN EMPIRICAL INVESTIGATION OF ITS POSSIBLE PATHOLOGICAL CONSEQUENCES*

WALTER R. GOVE
Vanderbilt University

MICHAEL HUGHES
Vanderbilt University

OMER R. GALLE
University of Texas

American Sociological Review 1979, Vol. 44 (February):59-80

Several recent studies have suggested that, contrary to investigators' initial expectations, household crowding typically has little impact on humans. Using a sample collected in Chicago which minimized the collinearity between crowding and socioeconomic variables, we find that both objective crowding (as measured by persons per room) and subjective crowding (as indicated by (1) excessive social demands and (2) a lack of privacy) are strongly related to poor mental health, poor social relationships in the home and poor child care; and are less strongly, but significantly related to poor physical health, and to poor social relationships outside the home. Furthermore, these three crowding variables taken together, on the average, uniquely explain as much (and with many indicators, more) variance in our dependent variables as is uniquely explained by the combined effects of sex, race, education, income, age, and marital status. It is suggested that attention be turned away from the question of whether crowding ever has effects to the study of factors which maximize or minimize its effects.

As Baldassare (1978) has demonstrated, a large number of factors in the sixties and early seventies led to the belief by a substantial part of the scientific community and most of the general population that high levels of density have serious detrimental effects on humans. During this time there were a number of studies on the effects of high levels of density on human behavior. From these studies it became obvious that it was necessary to distinguish between density at the level of the macroenvironment (as measured, for example, by persons per acre) and overcrowding in the macroenvironment, such as crowding in the home (e.g., Carnahan et al., 1974; Galle and Gove, 1978). It is now fairly clear that while density at the macrolevel probably has some minor "pathological" effects, it is not a variable of major substantive importance (e.g.,

Galle and Gove, 1978). In contrast, the evidence on overcrowding in the home is much less consistent. It might be noted that overcrowding in the home is much more analogous to the overcrowding described in the numerous animal studies (Galle et al., 1972; Galle and Gove, 1978). More important is that relationships in the home are enduring and play a very important role in determining the well-being and behavior of the individual (e.g., Stokels, 1976; Baldassare, 1978). Disruption of these relationships due to overcrowding is thus apt to have serious consequences.

Virtually all the investigators who have reviewed the literature of the effects of overcrowding in the home have concluded that it suffers from a number of serious methodological problems and limitations. In spite of these limitations, the recent reviews of the literature by Fischer et al. (1975) and Chadwick (1972) conclude that density and crowding have at the very most extremely modest effects. Freedman (1975:7) takes an even stronger stand. He concludes that

high density (crowding) does not have generally negative effects on humans. Overall, with other factors equated, living, working,

* Address all communications to: Walter R. Gove; Department of Sociology; Vanderbilt University; Nashville, TN 37235.

This research was supported by NICHD Grant #5-RO1-HD-6911-02. We would like to thank Mark Baldassare, Claude Fisher, Lisa Heinrich, Tom Gregor, Nina Gove and William Rushing for their comments on an earlier draft.

or spending time for any reason under conditions of high density [and crowding] does not harm people. It does not produce any kind of physical, mental or social pathology. People who experience high density are just as happy and productive as those who experience lower density.

In contrast, we perceive the evidence as tentative but as suggesting that overcrowding, at least under certain conditions, does have detrimental effects (Galle and Gove, 1978). A generally similar position is taken by Altman (1975) and Baldassare (1978).

The best evidence on the effects of overcrowding in the home comes, of course, from data on individuals, but the vast majority of studies have used aggregate data (Galle and Gove, 1978). Some of the early studies on individuals suggest that crowding does have detrimental effects (Reimer, 1945; Chombart de Louwe, 1975; Schorr, 1966; Wilner et al., 1962). More recently there have been four studies using survey data looking at the effects of overcrowding in the home. The studies by Mitchell (1971) and Marsella et al. (1970) studied Asians and, as culture plays a major role in determining the effects of crowding (see below), it is probably inappropriate to draw direct inferences from these studies regarding the effect of crowding in western culture. Both of these studies suggested crowding had clear but not overwhelming effects; however, the study by Marsella et al. (1970) is so flawed by its small sample size and lack of controls that it should be viewed with great caution. Baldassare (1978) has recently conducted a secondary analysis of survey data collected for purposes other than looking at the effects of crowding. He has, in our view, good measures of interpersonal relationships and poor measures of mental health. He found that overcrowding was related to poor interpersonal relationships in the home but not to poor mental health. Recently Booth and his associates conducted a major survey in Toronto specifically to look at the effects of overcrowding. These results are available in a series of papers (Booth and Cowell, 1976; Welch and Booth, 1975; Booth and Edwards, 1976; Welch, 1975; Booth and Johnson, 1975; Booth, 1975; Johnson

and Booth, 1975; Edwards and Booth, 1975) and a book (Booth, 1976). Booth (1976:1) concludes that "perhaps the most important finding of this study, contrary to our expectation before we began the study, is that crowded conditions seldom have any consequences and even when they do their effects are very modest." Unfortunately, as is demonstrated in detail elsewhere (Gove and Hughes, 1979b), Booth's sample is so atypical and homogeneous and the measurement and analysis are so flawed that it is difficult to draw any conclusions about the effect of crowding from the Toronto study.

In conclusion, it is widely believed by persons outside the scientific community that overcrowding is an important variable. In contrast, most of the recent investigators of the effects of crowding on humans do not see it as a variable of major importance. However, a careful reading of the literature indicates that the evidence is inconclusive.

CONCEPTUALIZATION OF CROWDING

The theoretical literature on the experience of crowding focuses on two analytically distinct but interrelated concepts: an excess of stimulation and a lack of privacy. For example, Desor (1972) defines crowding as "receiving excess of stimulation from social sources." Other investigators who have emphasized stimulus overload in the experience of crowding are Rapoport (1972), Galle et al. (1972), Wohlwill (1974), and Milgram (1970). Perhaps the best theoretical discussion of the effects of the environment on behavior is the book by Altman (1975). Altman, while recognizing the importance of stimulus overload, feels that the concept of privacy is the key to understanding crowding. We would note that although there is an extensive *conceptual* literature on privacy (e.g., Altman, 1975; 1976), and stimulus overload, there has been no effort to measure these variables in the study of crowding in the home. In combination, these concepts suggest that the experience of crowding involves an excess of social stimuli, generally in the form of demands on one, combined with an inability to regulate or control when one

receives the demands and how and when one is expected to respond to them.

A key factor in understanding the effects of crowding is the recognition that culture determines what are appropriate demands and appropriate responses. Furthermore, it appears that in all cultures there are ways in which one can socially construct a situation and setting where one can withdraw from interaction and experience privacy, and there are very sharp cultural variations in how social interaction and privacy are regulated (Hall, 1966; Anderson, 1972; Gregor, 1977; Morgan, 1881; Mitchell, 1975; and Altman, 1975).

Virtually all the work on the determinants of behavior posit an optimal level of social stimuli which is associated with effective behavior and treat an excess or surfeit of stimuli as producing problematic behavior. This is true of work on isolation and crowding on animals (Allee, 1938; Galle and Gove, 1978), isolation and crowding in humans (Altman, 1975; Levi and Anderson, 1975; Galle and Gove, 1978; Gove et al., 1978), system analysis and cybernetics (Manderscheid, 1975), and stress theory (e.g., Welford, 1974). If this model which has been developed independently from a variety of sources is essentially correct, then it seems plausible that the norms within a given culture would regulate social interaction so that persons in typical situations would experience an optimal level of social interaction. If this is the case then it would follow that in many societies, particularly a society as complex and diverse as ours, some persons, particularly those in certain atypical situations, would experience an excess of social demands and a lack of privacy. In summary, due to cultural differences in the normative regulation of interaction and privacy, it seems likely that crowding would be experienced in most cultures by those persons who experience the most demands and have the least privacy.

If this analysis is correct, then some persons in our society should experience crowding despite the fact that, compared with other societies, our levels of crowding are low. Most investigators appear to assume that the greater the number of per-

sons per household, the greater the number of role obligations and experienced demands and hence the greater the experience of crowding. Also, implicit is the assumption that if the number of persons is held constant, when there are comparatively few rooms individuals will be less able to regulate their interaction, and hence will have less privacy and experience more crowding.

The notion that demands and lack of privacy are produced by the excess of persons per room and not simply by the number of persons is based on several assumptions. First, crowding results from a situation characterized by the inevitability of contact between persons, and an inability for persons to control the presence of others. Second, close proximity of persons increases the likelihood of attempted interaction. Third, a high ratio of persons to rooms will increase the degree one is obligated to be responsive to others. Fourth, in a crowded household, since everyone's daily activities may be easily observed by others, the most intimate aspects of one's 'self' are exposed and one lacks the back regions which Goffman's (1959) analysis suggest are important for both the maintenance of 'self' and for the effective performance of one's activities.

These assumptions seem reasonable and have resulted in the almost ubiquitous use of the measure produced by dividing the number of persons by the number of rooms. These assumptions, however, are untested. Furthermore, it seems obvious that the experience of crowding may involve other factors. Baldassare (1978) has suggested that the key variable is power and that individuals with power will regulate their environment so that they do not experience crowding. Although power is obviously relevant, we believe that socially defined role obligations are probably more important. Thus, a wife and mother has role obligations towards her husband and child which may result in an excess of experienced demands and a lack of felt privacy (e.g., Gove and Geerken, 1977; Gove and Hughes, 1979a). In situations where two different intimate role relationships come into play (as, for example, when one's mother-in-law is staying in one's house), there is apt to be a break-

down in the normative regulation of interaction which results in an excess of (often conflicting) demands and intrusions into intimate interactions. In other cases some persons or some families, for a variety of reasons, including intellectual and/or social incompetence, simply may function in a fashion which produces high levels of experienced crowding (e.g., Booth, 1976). In fact, in our society the role of child appears to be institutionalized as one where the norms regulating interaction are largely waived, and young children are allowed to make numerous demands and to intrude upon the privacy of others (e.g., see Aries's [1962] historical discussion of the "discovery" of childhood).

In summary, crowding has typically been operationalized by the measure persons/room (P/R) and conceptualized as the experience of an excess of social demands and/or a lack of privacy. However, there is almost no empirical evidence which validates that the number of persons per room is a good objective measure of crowding, and none of the studies of the effects of crowding in the home have looked at the experience of an excess of demands or a lack of privacy. The general model is that the subjective experience of crowding, as measured by an excess of demands and lack of privacy, acts as an intervening variable between an objective measure of crowding (P/R) and a set of dependent variables comprised of a number of moderate "pathological" states and behaviors. This model is presented in Figure 1. This model indicates that, in general, controlling for the subjective experience of crowding would greatly reduce the relationship between P/R and the dependent variables. However, from the above discussion this is clearly an oversimplification and there are a number of

variables other than P/R which relate to crowding. These include the household composition, the characteristics of the particular situation and the characteristics of the individual. Furthermore, there will be instances where the effects of crowding involve primarily special arrangements reflecting whether or not specific areas are designated for specific activities.

THE PRESENT STUDY

The present paper introduces two innovations which will help clarify whether or not crowding does have a (pathologic) effect. Given that there is a strong relationship between the social structure and crowding one would anticipate difficulty in identifying an independent effect of crowding due to problems of collinearity (Galle and Gove, 1978; 1979). We therefore have sampled in a manner so as to minimize the relationship between the social structure and crowding. Second, we begin by looking at a set of items that were specifically designed to measure immediate reactions to an overcrowded environment. Many of these items may be seen as reflecting the subjective experience of overcrowding. Not only will this be of assistance in studying the effects of objective levels of crowding but to psychologically inclined investigators it is the subjective and not the objective experience of crowding that is the key variable (e.g., Stokols, 1972a; 1972b; Altman, 1975).

The study was conducted in Chicago. Approximately 25 interviews were gathered from each of 80 selected census tracts within the city limits. To minimize the collinearity between socioeconomic status, race and crowding, we chose equal numbers of tracts from each of four different categories: (a) tracts with low levels of socioeconomic status and low levels

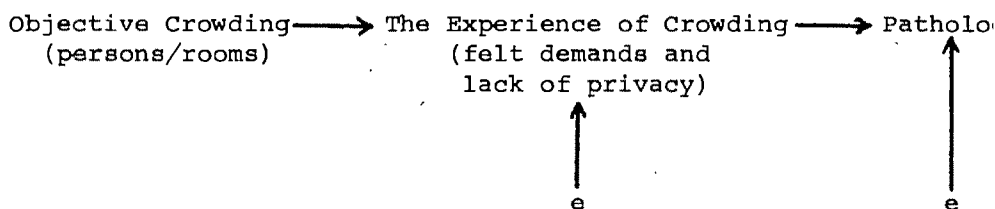


Figure 1. The General Model of the Effects of Crowding

crowding, (b) tracts with low levels of socioeconomic status and high levels of crowding, (c) tracts with high socioeconomic status and low crowding, and (d) high socioeconomic tracts which also had high levels of crowding. We also divided the sample by race. That is, we selected five predominantly black (more than 90%) tracts, five racially mixed tracts (10 to 90% black) and ten predominantly white tracts for each combination of crowding and socioeconomic status. The correlations between income and crowding were: (1) white, $r = -.130$, $p < .001$; (b) black, $r = -.064$, $p > .05$; (c) all respondents, $r = -.151$, $p < .001$. The correlations between education and crowding were: (a) white, $r = .159$, $p < .001$; (b) black, $r = -.078$, $p < .05$; (c) all respondents, $r = -.151$, $p < .001$. The correlations, although statistically significant, are not large, and it is clear that the collinearity between social class and crowding does not pose a serious problem with these data.

Households were chosen randomly from each census tract, and a randomly selected adult was interviewed in each of the selected households. The average interview lasted an hour and fifteen minutes. Besides the initial contact attempt, if no one was home there were three more contact attempts. The respondent was paid three dollars for completing the interview. We had a 68.1% response rate at the time of the screening interview and

a 89.1% response rate for the full interview. Although by historical standards this is a relatively high nonresponse rate, survey data is becoming increasingly difficult to collect, and we would note that these rates are similar to those of the only other recent survey done in Chicago (Ilfeld, 1976) and much lower than in the overcrowding survey done in Toronto by Booth (1976).

As Table 1 shows, the levels of crowding in our full sample are very similar to those of the nation as a whole, central cities in 1970 and Chicago in 1970, and discernibly less than those of the nation as a whole and central cities in 1950. As a consequence, if we find crowding does have an effect, this result is clearly relevant to understanding the effects of crowding in the general population. The second part of Table 1 compares the demographic characteristics of the sample with the population of Chicago in 1970. Although our sample was not drawn in a manner such that there was any reason to assume it to be representative of Chicago, our sample is in fact quite similar to the population of Chicago in terms of race, income, education and age. Furthermore, a separate analysis of blacks and whites indicates that these two subgroups of the sample correspond fairly closely to their counterparts in the Chicago population on a variety of demographic characteristics. In short, these data suggest that our sam-

Table 1. A Comparison of the Characteristics of the Sample^a

Part A: Comparison of the Housing Characteristics of the United States, Chicago and the Sample								
	Nation ^a 1950	Central ^a Cities 1950	Nation ^a 1970	Central ^a Cities 1970	Chicago 1970	Full Sample 1973-74 (includes persons living alone)	Sample Used 1973-74 (excludes persons living alone)	
Median Persons/room	.66	.64	.54	.51	.52	.50	.65	
% with 1.01+ Persons/room	15.7	13.3	8.2	8.5	9.5	10.1	13.0	
Part B: A Comparison of the Demographic Characteristics of Chicago and the Sample								
	% Nonwhite	% Female	Family Income in Percentiles			Median Education of Persons	Attributes of Persons 18 Years and over	
			10th	50th	90th	25 and over	Median % over 65	
Chicago 1970	34.0%	52.4%	3,158	10,241	22,044	11.2	43.9	15.6
Sample 1973-74	33.6%	65.8%	2,942	10,012	22,700	11.7	46.7	18.9

^a Data taken from Carnahan et al. (1974) and 1970 census.

ple is relatively typical and does not involve a particularly unusual population. Unfortunately, there is a significant overrepresentation of females. This overrepresentation of females was also a characteristic of the only other recent survey in Chicago (Ilfeld, 1976) and the only other survey on overcrowding done in North America (Booth, 1976), and a review of other household surveys shows that it is a general characteristic of such surveys. As we control for sex in our analysis the overrepresentation of females should not pose a serious problem in determining whether or not overcrowding has significant effects.

Although we interviewed 2,035 respondents, 453 or 22% were living alone. As we were initially screening by households and the proportion of households in Chicago where persons were living alone in 1970 was 24%, this proportion is reasonable. Since our definition of crowding implies the presence of others, we have excluded persons living alone from our analysis. An analysis of the data which includes those who live alone shows that by excluding these persons from our analysis, we are weighting the analysis against the overcrowding hypothesis.

In our presentation we will rely exclusively on multiple regression analysis. The following characteristics of the respondent will be used as controls: (a) sex (0 = male, 1 = female); (b) race (0 = nonwhite, 1 = white); (c) marital status (0 = unmarried, 1 = married); (d) education (coded as actual years of education); (e) age (coded as actual years of age); and (f) family income (coded in 21 categories of \$2,000 intervals ranging from \$0 to \$40,000+). These are the traditional demographic variables considered by social scientists, and the literature suggests that they typically would be related to the dependent variables under consideration. Although technically the respondents are representative only of the census tracts sampled, we can think of no reason why the *effects* of income, education, sex, race, age and marital status should deviate markedly from those found in a more typically drawn sample. Thus, from the analysis, we should be able (1) to discover whether or not crowding does have an independent

effect on the dependent variables and, (2) by comparing this effect (if any) with that of the control variables, to get a fairly accurate idea of the effect of overcrowding relative to the effects of the variables traditionally considered.

Because of the technical requirements of multiple regression it is conceivable that its use could produce misleading results. For example, we had to dichotomize race and marital status, thereby losing information on some control variables. Similarly, with a variable such as age, it is conceivable that the relationship to some of the dependent variables might not even be monotonic. Furthermore, some of our dependent variables are not scales but dichotomized or trichotomized response categories to a particular question and these responses are sometimes highly skewed. We therefore performed a detailed set of dummy regression analyses to be sure that the results as presented reflect the actual relationships. In these dummy regression analyses, in addition to the other control variables we used four categories for marital status, four categories for ethnic status, and ten indicators of the occupational status of the household head. This very cumbersome analysis produced results virtually interchangeable with those presented and confirmed that (1) the relationship between our measure of crowding and the dependent variables is linear, (2) the use of dichotomized and trichotomized dependent variables distorts neither the pattern nor the strength of relationships, and (3) the way we categorized the control variables does not have a discernible impact on their effect.

The Experience of and Direct Reaction to Crowding

There has been very little effort to measure one's reaction to an overcrowded environment with survey techniques (e.g., Altman, 1975). Thus, for our questionnaire we picked 28 items that, on intuitive grounds, we felt would capture the persons' subjective experience of crowding and their ways of reacting to it. At the time we were developing items we were totally unaware of the literature, which

suggests that crowding is experienced by an excessive social demand and a lack of privacy. To group the 28 items into sets of interpretable clusters, we performed a number of factor analyses. Both orthogonal (with varimax and equimax rotations used) and oblique solutions were obtained. In every case the same six clusters were indicated.

From our analysis the two most prominent clusters to emerge were a set of six items that measured an overload of disruptive social demands and three items that measured the respondent's lack of privacy. The three items in the latter cluster were: "(1) In general, do you have as much privacy as you want? (2) At home do you have a place you consider to be your own? And (3) At home does it seem as if you can never be by yourself?" These items were added together to create a *lack of privacy* scale. Two of the items in the social demands cluster could be interpreted as partially reflecting the respondent's poor psychological state, and they were thus dropped from the remaining analysis to avoid biasing the results toward finding "pathological" relationships with crowding.¹ The remaining four items were added together to create a *felt demands* scale. The items in this scale were: "(1) Does it seem as if others are always making demands on you? (2) At home does it seem as if you almost never have any peace and quiet? (3) At home does it seem as if you are always having to do something for someone else? And (4) When you try to do something are you almost always interrupted?"

An analysis of the relationship of lack of privacy to the six control variables and P/R showed that P/R was much more strongly related than any of the control variables. P/R had a Beta of .330 ($p < .001$) while the next strongest Beta was .151 ($p < .001$) which was associated with race. (Whites experience less privacy than blacks, which may be interpreted as indicating that blacks, who have historically experienced more crowding, have developed norms which increase the amount of

privacy one can have under objectively crowded conditions.) In all, P/R and the six control variables explain 14.3% of the variance in the lack of privacy scale. Of the total explained variance 60.8% is uniquely explained by P/R, 21.7% is uniquely explained by the six control variables and 17.5% of the variance is collinear. A similar analysis with the felt demands scale also showed that P/R was more strongly related to it than any of the control variables. P/R had a Beta of .297 ($p < .001$) while the next strongest Beta was .143 ($p < .001$), which was associated with sex. (Women report more demands and interruptions than men, which may be interpreted as indicating that women experience an excess of demands due to their role obligations.) In all, P/R and the six control variables explain 15.5% of the variance in the felt demands scale. Of the total explained variance 46.5% is uniquely explained by P/R, 23.3% is uniquely explained by the six control variables and 17.5% of the variance is collinear. Thus as the theoretical literature predicts, our analysis indicates that lack of privacy and felt demands are strongly related to objective crowding (P/R) and that our two scales are good measures of the experience of crowding.

The other four clusters reflect the respondents' reaction to crowding. We used these clusters to create four additional scales. Two of the scales measure different types of withdrawal. The *physical withdrawal* scale is a two-item scale which measures the extent the respondent "desires" to leave the home "to get away from it all" and the extent he or she "actually" does so. The *psychological withdrawal* scale reflects the extent the respondent withdraws into a subjective world and ignores the demands of the immediate environment.² The relationship of P/R to both of these two scales is as strong as the combined relationship of the six

¹ The two items dropped were: "(1) When you are at home do others often get on your nerves, and (2) do you find it easy to relax at home?"

² The actual items were: (1) "Do you often ignore the demands of others? (2) Do you sometimes pretend to be busy even though you are not? (3) At home, when someone asks you to do something, do you sometimes agree to do it even though you don't think you will do it? (4) At home when others are talking to you do you sometimes pretend that you don't hear them?"

control variables. The third scale, labelled *lack of planning*, measures the lack of a short-run future orientation in the respondent, with specific reference to the disposition or ability to make plans.³ P/R is also as strongly related to this scale as the six control variables combined. The last scale, labelled *washed-out*, measures the extent to which the respondent cannot relate and respond to the requirements the day-to-day situation presents.⁴ Although P/R was not more strongly related to the washed-out scale than every control variable (sex was more strongly related), the relationship with P/R was strong and highly significant ($p < .001$).

In summary, these data indicate persons largely experience crowding in terms of excessive demands and lack of privacy. They react to crowding, as measured by P/R, with physical and psychological withdrawal. Furthermore, objective crowding apparently produces ineffectual planning behavior and a state of being physically and emotionally drained. Even if no other effects of crowding are found, it seems clear that crowding has important effects on the individual.

Mental health. We assume that the most direct impact of overcrowding is on the psychological state of the individual and that this impact in turn affects the individual's behavior. Thus, if crowding has adverse effects it would almost have to be related to poor mental health among persons who experience crowding. There is little direct support in the literature for the assumption that overcrowding is related to poor mental health; not only is there surprisingly little data on this relationship, but the available data suffer from serious measurement and other methodological problems⁵ (Galle and Gove,

1978). We devoted considerable effort in developing measures that would tap empirically and analytically distinct components of mental health and be valid and reliable. The detailed analysis presented in Brocki and Gove (1978) indicates that we were successful in this endeavor. A key component of poor mental health is the experience of psychiatric symptoms, which was measured by the *psychiatric symptom* scale presented in Gove and Geerken (1977). Another indicator of poor mental health is the absence of *positive affect*, with our indicator being items developed by Bradburn (1969). The early research by Bradburn and the subsequent research by others (Cherlin and Reeder, 1975) demonstrate that feelings of positive affect are largely unrelated to feelings of negative affect and that a combination of these two measures produces a better overall measure of mental health than either considered separately. As occurred with Bradburn's data, our scale of psychiatric symptoms is essentially uncorrelated with the scale of positive affect ($r = -.05$). We therefore z-scored the two scales and combined them to get a *mental health balance scale*. These measures treat mental health as involving a continuum. In an effort to identify something approximating a psychiatric case the respondents were asked, "Have you ever felt that you were going to have, or were close to having a nervous breakdown?" The measure *nervous breakdown* involves respondents who said yes to the first question and then indicated this had occurred in the past year. One of the themes in the literature is that overcrowding should be associated with a high degree of irritability. We therefore used the measure of *manifest irritation* presented in Gove (1978). Another theme in the literature is that crowding should be related to a sense of powerlessness, normlessness and belonginglessness. We combined measures of these feelings into a general *alienation* scale.⁶

³ The actual items were: (1) "Do you almost always plan your daily activities ahead of time? (2) Do you usually do what you plan to do? (3) Would you say you almost never make plans?"

⁴ The actual items were: "(1) Is there often so much going on about you that you can't think straight? (2) Do you often feel run down? (3) Do you often feel that it is impossible to finish anything? (4) Do you almost never seem to be able to do what you want to do? (5) Do you often feel lonely? (6) Do you almost always feel tired?"

⁵ A more detailed presentation of the problems and limitations of the existing data on the relation-

ship between overcrowding and poor mental health is available on request.

⁶ The respondents were asked if they agreed or disagreed with the following items: (1) The average person can have an influence on governmental decisions; (2) the trouble with the world today is that most people don't really believe in anything; (3) most

Furthermore, from the literature it seemed that overcrowding would be related to a poor self-evaluation, and thus we used the measure of *self-esteem* presented in Gove (1978). The final index was the respondents' happiness as measured by the general happiness question used by Bradburn (1969) and others.

Before we turn to the main analysis, a prior issue needs to be looked at. As noted, P/R almost invariably has been used as the objective measure of crowding. This use is based on the assumption that, with the number of rooms controlled for, the number of persons is positively related to the experience of crowding and that, with the number of persons controlled for, the number of rooms is negatively associated with the experience of crowding. These assumptions are untested and other views are plausible. For example, an excess of demands may be almost totally a product of the number of obligations one has toward others in the household and the number of rooms may be virtually irrelevant. In this case the number of persons would be a better measure of crowding than P/R as it would be both more direct and less contaminated. Furthermore, it has been argued by Baldassare (1978) that most of the apparent effects of crowding he found are actually due to the fact that crowded households tend to have large numbers of children. It appears to be his position that the effects of children are not due to their impact on household crowding but to other factors, and that controlling for the number of children would demonstrate that the correlation between crowding and other dependent variables is spurious. While not wanting to entirely rule out this possibility, we believe that a good case

can be made that to the degree children are associated with crowding much of their impact on others is due to the fact that they create a crowded household. Furthermore, such statistical controls are problematic for, in controlling for the number of children when looking at the relationship between P/R and a dependent variable, one is statistically eliminating most of the variance in P/R (i.e., one is using as a control variable a measure that is very highly correlated to the independent variable one is trying to look at). Nevertheless, it is clearly important to attempt to ascertain the validity of P/R as an objective measure of crowding.

In our analysis of the relationship of P/R to the lack of privacy scale and the felt demands scale we also looked at the relationships with number of persons, number of rooms, and a variety of other variables. From this analysis it was clear that P/R overall appeared to be the best objective predictor of the subjective experience of crowding. However, it was also clear that many of the variables we were looking at were so highly intercorrelated that it was impossible to come to any definitive conclusions. For example, among the full sample, for (a) P/R and number of persons, $r = .801$; (b) P/R and number of rooms, $r = -.025$; and (c) number of persons and number of rooms, $r = .505$. Obviously, although persons and rooms are highly intercorrelated, most of the variance in P/R is due to the number of persons. In looking only at respondents with children, the following correlations were obtained: (a) P/R and number of children, $r = .830$; (b) P/R and number of rooms, $r = -.376$; (c) number of persons and number of rooms, $r = .142$. Obviously for this group crowding is almost redundant with the number of children. We would note that the comparatively weak relationship between rooms and children suggests that when there are a large number of children they tend to share bedrooms. Because of the inability to draw definitive conclusions regarding P/R due to the high collinearity between P/R and number of persons and number of children, we looked at the relationships for these variables across our set of dependent variables to see if there was a justifi-

people really do care what happens to the next fellow; (4) this world is run by the few people in power and there is not much the average person can do about it; (5) there are so many ideas of what is right and wrong these days it is hard to figure out how to live your life; (6) most people are just naturally friendly and helpful; (7) it doesn't matter how hard you try, most of what happens to you is a matter of fate; (8) things are changing so fast these days one doesn't know what to expect from day to day; (9) you hardly ever feel awkward and out of place; (10) you seem to have a lot of control over what happens to you.

cation for using P/R as our objective measure of crowding. The analysis of these relationships for mental health is presented in Table 2.

A comparison of the number of persons and the number of rooms entered separately and jointly shows the predicted effects for six of the mental health variables. That is, the relationships with (a) number of persons and (b) number of rooms are discernibly increased when the other variable is used as a control. In the case of *nervous breakdown* controlling has no effects. In the case of *manifest irritation* controlling has no effect on the relationship with the number of persons but reduces the relationship with the number of rooms: As the number of persons and number of rooms are highly intercorrelated the typical effect of jointly entering both variables would be to reduce the individual relationships. As this generally does not happen with these data this provides fairly strong support for the view that the effects of (a) number of persons and (b) number of rooms are mediated by each other. A comparison of P/R and number of persons entered separately and jointly shows that with six of the eight mental health variables, after joint controls, the relationship with number of persons reverses and is now in the unpredicted direction, and in the case of *self-esteem*, significantly so. Furthermore, in each of these cases the size of the Beta associated with P/R increases when both variables are jointly entered. With *nervous breakdown* in all comparisons the Betas are in the predicted direction and controls reduce the size of both. However, in both comparisons the Beta with P/R is larger than that with number of persons. All of these measures deal with some aspect of the respondents' general mental health and the analysis provides strong support that for these variables P/R is a much better measure of crowding than number of persons. In the case of *manifest irritation* that pattern is just the reverse. This could be interpreted as a fluke (remember the very high collinearity between the variables). However, we are inclined to interpret the differences as real. Acts of *manifest irritation*, much more than the other variables, are probably

much more reactive to the number of persons one interacts with and the number of actual obligations one has and are probably less affected by spatial arrangements.

Now let us turn to a comparison of only those respondents who have children and look at the effect of P/R as compared with the effect of number of children. Before joint controls in seven of the eight relationships, number of children is statistically significant in the predicted direction. However, after controls none of the relationships is statistically significant in the predicted direction, three of the relationships have reversed sign and, in fact, the relationship with *self-esteem* now has a statistically significant relationship in the "wrong" direction. In contrast, seven of the relationships with P/R are statistically significant before joint controls and after controls five of these remain statistically significant. Furthermore, the sign of all of the relationships after joint controls remains in the predicted direction. Taken as a whole, these data clearly suggest that P/R is the best overall measure of crowding. Similar analysis with the other dependent variables also support this conclusion.

The detailed data on mental health are presented in Table 3. Before turning to substantive relationships, a few comments on the mode of analysis are warranted, as it is somewhat atypical. The first column in each table simply presents the zero-order correlation between the independent and control variables and the dependent variable. The second column presents Betas associated with each of the crowding variables when only the control variables are entered. The reason the three crowding variables were not entered simultaneously for this analysis is due to the issue of collinearity. Not only is P/R strongly related to lack of privacy and felt demands but we predicted that subjective experience of crowding would often interpret the relationship between P/R and the dependent variables and consequently this relationship should frequently be markedly reduced when lack of privacy and felt demands are added as controls. In addition, the lack of privacy scale and the demands scale are strongly correlated with each other ($r = .495, p < .001$). In

Table 2. An Analysis of Different "Objective" Determinants of Crowding and Their Relationship to Mental Health: A Comparison of Standardized Regression Coefficients Controlling for Age, Sex, Income, Education, Race and Marital Status

<i>Determinants of Crowding</i>	Positive Affect		Psychiatric Symptoms		Mental Health Balance		Self-Esteem	
	Variables Entered		Variables Entered		Variables Entered		Variables Entered	
	Separately	Jointly	Separately	Jointly	Separately	Jointly	Separately	Jointly
1. a. Number Persons	-.077 ^b	-.106 ^c	.037 ^{na}	.055 ^a	-.076 ^b	-.108 ^c	-.042 ^{na}	-.060 ^{na}
b. Number Rooms	.031 ^{na}	.074 ^b	-.025 ^{na}	-.046 ^{na}	.041 ^{na}	.083 ^b	.022 ^{na}	.046 ^{na}
2. a. Number Persons/Number Rooms	-.112 ^c	-.134 ^b	.060 ^{na}	.083 ^a	-.118 ^c	-.155 ^c	-.093 ^c	-.163 ^c
b. Number Persons	-.077 ^b	.027 ^{*na}	.037 ^{na}	-.028 ^{*na}	-.076 ^b	.045 ^{*na}	-.042 ^{na}	.084 ^{*a}
3. (only respondents with children)								
a. Number Persons/Number Rooms	-.147 ^c	-.150 ^b	.090 ^b	.068 ^{na}	-.166 ^c	-.152 ^c	-.126 ^c	-.218 ^c
b. Number of Children	-.095 ^b	.004 ^{*na}	.078 ^a	.033 ^{na}	-.120 ^c	-.020 ^{na}	-.006 ^{na}	.135 ^{*b}
	Nervous Breakdown		Alienation		Happiness		Manifest Irritation	
	Variables Entered		Variables Entered		Variables Entered		Variables Entered	
	Separately	Jointly	Separately	Jointly	Separately	Jointly	Separately	Jointly
1. a. Number Persons	.055 ^a	.057 ^a	-.075 ^b	.126 ^c	.056 ^a	-.083 ^b	.132 ^c	.125 ^c
b. Number Rooms	.017 ^{na}	-.005 ^{na}	-.080 ^b	-.130 ^c	.035 ^{na}	.068 ^a	.068 ^b	.018 ^{na}
2. a. Number Persons/Number Rooms	.061 ^a	.044 ^{na}	.132 ^c	.194 ^c	-.083 ^b	-.103 ^a	.095 ^c	-.042 ^{*na}
b. Number Persons	.055 ^a	.021 ^{na}	.075 ^b	-.075 ^{*na}	-.056 ^a	.024 ^{*na}	.132 ^c	.164 ^c
3. (only respondents with children)								
a. Number Persons/Number Rooms	.054 ^{na}	.007 ^{na}	.148 ^c	.164 ^c	-.090 ^b	-.057 ^{na}	.118 ^c	.089 ^a
b. Number of Children	.074 ^a	.070 ^{na}	.084 ^b	-.023 ^{*na}	-.086 ^a	-.048 ^{na}	.101 ^b	.042 ^{na}

* = <.05, b = <.01, c = <.001.

* Unpredicted direction.

short, if we entered the three crowding variables into the analysis at the same time, the apparent effect of both the individual variables and the overall effect of crowding would be less than the actual effects (e.g., Gordon, 1968). The third column presents the Betas with all crowding variables entered. This column serves two purposes. First, it allows us to ascertain whether the experience of crowding, as measured by demands and lack of privacy, does act as an intervening link between persons per room and the dependent variables.⁷ Second, it helps give an idea of the relative importance of the two components of the experience of crowding. The second part of the table presents the total explained variance (r^2) and the proportion of that variance that is uniquely explained by (a) the five control variables, (b) the three crowding variables, and (c) the proportion of variance that is collinear with both the control variables and the crowding variables.

As the data in Table 3 show, after controls the crowding variables are related to experiencing psychiatric symptoms, lacking a positive affect, having a nervous breakdown, experiencing manifest irritation, feeling alienated, having a low self-esteem and feeling unhappy. These relationships are statistically significant for all mental health items with all the crowding indices, except for the relationship between felt demands and positive affect. In most instances the subjective experience of crowding is related more strongly to the mental health measures than P/R. With all the mental health measures except positive affect and to some extent alienation, when the three crowding variables are simultaneously entered into the analysis the relationship with persons per room is greatly reduced. This suggests that the experience of crowding, as opera-

tionalized by the demands scale and lack of privacy scale, acts as an intervening variable between persons per room and the mental health variables. Overall the effects of lack of privacy and felt demands are relatively comparable. Taking an overall average shows that the three crowding variables uniquely account for 37.7% of the total explained variance, the six control variables uniquely account for 44.6%, and 17.7% is collinear.

Social relations in the home. The present data show that overcrowding is associated with irritability, withdrawal, weariness, ineffectual behavior and a variety of indicators of poor mental health. From these effects, it would follow that crowding should be related to poor social relationships in the home. The literature provides support for this premise (Loring, 1955; Reimer, 1945; Galle et al., 1972; Galle and Gove, 1977; Mitchell, 1971; Baldassare, 1978; Booth and Edwards, 1976), but there are serious methodological problems with many of these studies as well as substantial variation in the degree to which crowding appears to have negative effects on family relationships.

In our analysis we look at four measures of marital relations (998 respondents were married), one measure of the respondents' relationship with their children (776 respondents had children), and one measure of relations with others living in the home (580 respondents had others living in the home). To measure marital relations, we used a subset of the items in Ogden and Bradburn (1969) to create a scale measuring *good marital relations*⁸ and another subset to create a scale measuring *poor marital relations*.⁹ These scales were z-scored and then combined to create a

⁷ Following Blalock (1972), most sociologists use partial correlation coefficients where we have used standardized regression coefficients to test for intervening variables. We would simply note that, since the significance test used in the SPSS statistical package utilized here (Nie et al., 1975) for testing our regression coefficients is mathematically identical to that offered by Blalock to test for the significance of partial correlation coefficients, the procedure we use is virtually the same.

⁸ We asked whether in the past few weeks the respondent and his or her spouse had (1) had a good laugh together or shared a joke, (2) been affectionate toward each other, (3) spent an evening just chatting with each other, (4) visited with friends, and (5) done something the other particularly appreciated.

⁹ We asked whether in the past few weeks the following had caused differences of opinion or created problems in their marriage: (1) being too tired, (2) having irritating habits, (3) spending money, (4) being away from home, (5) deciding what to do with free time.

Table 3. Overcrowding and Mental Health

Part A: Zero-Order r 's, Betas with Controls for Demographic Variables (β_1), Betas with Controls for Demographic Variables and the Other Crowding Variables (β_2).

Crowding Variables	Psychiatric Symptoms			Positive Affect			Mental Health Balance			Nervous Breakdown		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Number Persons/Number Rooms	.168 ^c	.064 ^a	-.031 ^{ns}	-.093 ^c	-.112 ^c	-.119 ^c	-.180 ^c	-.121 ^c	-.059 ^a	.093 ^c	.060 ^a	-.004 ^{ns}
Demands	.298 ^c	.244 ^c	.203 ^c	.041 ^{ns}	.030 ^{ns}	.091 ^{ns}	-.179 ^c	-.149 ^c	-.074 ^b	.198 ^c	.179 ^c	.153 ^c
Lack of Privacy	.225 ^c	.188 ^c	.103 ^c	-.039 ^a	-.054 ^a	-.062 ^a	-.183 ^c	-.168 ^c	-.114 ^c	.143 ^c	.126 ^c	.056 ^a
Happiness	Self-Esteem			Alienation			Manifest Irritation					
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Number Persons/Number Rooms	-.110 ^c	-.084 ^b	-.016 ^{ns}	-.135 ^c	-.092 ^c	-.031 ^{ns}	.216 ^c	.135 ^c	.090 ^c	.193 ^c	.096 ^c	.000 ^{ns}
Demands	-.164 ^c	-.148 ^c	-.082 ^b	-.169 ^c	-.146 ^c	-.087 ^b	.185 ^c	.148 ^c	.104 ^c	.341 ^c	.278 ^c	.243 ^c
Lack of Privacy	-.184 ^c	-.171 ^c	-.129 ^c	-.184 ^c	-.156 ^c	-.107 ^c	.135 ^c	.118 ^c	.044 ^{ns}	.245 ^c	.184 ^c	.071 ^a

Part B: Proportion of Explained Variance That is (a) Uniquely Explained by the Crowding Variables, (b) Uniquely Explained by the Demographic Variables, and (c) Collinear between the Crowding and Demographic Variables.

	% Due to Crowding Variable	% Due to Demographic Variable	% Collinear between Demographic Variable	Total R^2
1. Psychiatric Symptoms	37.5	39.9	22.6	.166
2. Positive Affect	32.1	67.9	0.0	.053
3. Mental Health Balance	29.1	53.7	17.2	.119
4. Nervous Breakdown	61.5	19.2	19.2	.052
5. Happiness	47.1	40.0	12.9	.070
6. Self-Esteem	31.9	50.5	17.6	.091
7. Alienation	20.7	56.4	22.9	.140
8. Manifest Irritation	41.4	29.3	29.3	.181

^a = $p < .05$, ^b = $p < .01$, ^c = $p < .001$.^{*} Relationship in unpredicted direction.

marital relations balance scale. The fourth measure of marital relations was the question, "How close are you and your husband/wife? (very close, fairly close, not too close or not at all close)." The measure of the respondents' relationships with their children¹⁰ was the question, "All in all, how well would you say you got along with (name of child)? (very well, pretty well or not too well)." The measure of how well respondents got along with other persons living in the home involved the same question except for substituting the others' names. The respondents also were asked, "During the past year have you been involved in any arguments in the home? (yes, no)." This question was followed by asking if any of the arguments were serious and then asking, "Did any of these arguments lead to physical blows? (yes, no)."

These data are presented in Table 4. Looking at marital relations shows that, after controls, the three indices of crowding are related significantly to a lack of positive marital relations, the presence of negative relations, a low score on the marital relations balance scale, and not feeling close to one's spouse. Looking at the respondents' relationships with their children shows that persons per room is unrelated, while lack of privacy and felt demands have significant adverse effects. The pattern for the respondents' relationships with "others" is the same: persons per room is not significantly related, while lack of privacy and felt demands have strong negative relationships. Persons per room is unrelated to arguments in the home, while lack of privacy and demands are strongly related to having arguments. Perhaps the most consistent finding in the animal literature is that crowding is associated with aggressive behavior. The present data are consistent with this literature for, after controls, each of the three indices of crowding has a statistically significant relationship with physical violence in the home.

Comparing the effects of crowding with

those of the five control variables shows that crowding tends to explain more variance. On the average, the crowding variables independently account for 51.1% of the total explained variance, the control variables account for 39.1%, and 9.8% is collinear. As with the mental health variables, the data indicate that the two indices of experienced crowding, felt demands and lack of privacy, generally act as intervening variables "explaining" the relationship between persons per room and crowding.

Social relations outside the home. It would seem that crowding in the home would have a relatively slight effect on social relationships occurring outside the home, particularly in comparison to its effect on social relations in the home. However, if, as our data suggest, crowding has an effect on the mental state of the individual, we would expect it to have some effect on social relationships outside the home. Furthermore, visiting with others (friends, neighbors, relatives) often occurs in the home and one might expect crowding to have an effect on such visits. In our analysis we look at the respondents' relationships with their neighbors, relatives, and friends and at their involvement in arguments and physical violence outside the home. In every case crowding in the home had a statistically significant effect on these indicators of social relationships outside the home but, as anticipated, its effect relative to the control variables is minor.¹¹

Physical health. In the medical literature there is a long tradition of relating crowding and poor housing to morbidity and mortality and in general these studies report a fairly strong relationship between crowding and morbidity and mortality (Galle and Gove, 1978). Most of these studies are limited by the fact that they use ecological data, although a few use individual data (Gordis et al., 1969; Wilner et al., 1962; Booth and Cowell, 1976; and Baldassare, 1978). In many respects the Toronto study contains the best data, for its major emphasis was on physical health and the respondents received a detailed

¹⁰ This question was actually asked with regard to only one preselected child; for information with regard to this procedure see the section below on child care.

¹¹ The table presenting these data is available upon request.

physical examination. Booth and Cowell (1976:218), on the basis of their analysis, conclude that "crowded household and neighborhood conditions have very little or no effect on people's health." However, not only was the Toronto study generally flawed by serious methodological problems (Gove and Hughes, 1979b), but in addition there was a 49% attrition between the interview and the physical examination (Booth and Cowell, 1976:207), and a number of persons did not receive a physical examination because they were too ill to travel to the examination center. Furthermore, we are inclined to interpret their data as showing more of a relationship than they do. For example, after controlling for age, income, education, ethnic origin, parent's health, subjective household crowding, objective neighborhood crowding and subjective neighborhood crowding, they found 54% of the men who lived in crowded households had a stress-related disease, as compared with 34% of the men living in uncrowded households (Booth and Cowell, 1976:216). Nevertheless, as they suggest, the relationship between crowding and health may not be as strong as the ecological literature would indicate.

The present study did not focus on physical health and thus our data rely on the respondents' self-reports. The literature suggests that, if crowding is related to physical health, it is because persons in crowded households are physically run-down, more susceptible to infectious disease and, when sick, are involved in a flow of activities and consequently cannot get a good rest and are not well cared for (e.g., Galle et al., 1972; Schorr, 1966). In the interview we obtained information on all of these presumed relationships. The respondents were asked: "(1) Do you think you get enough sleep? (2) If someone else at home is sick with a bug, do you often seem to catch it? (3) When you are *really* sick, are you almost always able to get a good rest? (4) Even when you are *really* sick, are there a number of chores that you just have to do? (5) When you are *really* sick, is there someone to help take care of you?" To obtain an indicator of the respondents' health, we asked each one, "Would you say your overall health

is excellent, good, fair or poor?" We would note that the five measures of the presumed link between crowding and health are all significantly related to respondents' overall evaluation of their health (Gove and Hughes, 1979a).

The data on crowding and physical health are presented in Table 5. First, let us look at the variables linking crowding to physical health. All the relationships with felt demands and lack of privacy are statistically significant, with the relationship with felt demands consistently being the strongest. Persons per room has the weakest relationships, with only two being significant. The relative effect of the three crowding variables is quite strong. On the average, they independently account for 45.5% of the explained variance, the control variables independently account for 32.8%, and 21.9% is collinear. Turning to the respondents' evaluation of their overall health, we find that each of the crowding variables has a significant negative relationship with the respondents' health. The control variables, however, independently explain considerably more variance than the crowding variables. In general, the data are consistent with the premise that lack of privacy and felt demands tend to act as intervening variables interpreting the relationship between persons per room and the respondents' physical health.

Care of children. A very common finding in the animal studies is that crowding is related to the ineffectual care of offspring (Galle and Gove, 1978). Relatively little attention has been paid to the effects of crowding on child care, however. The literature that does exist consistently indicates that crowding has adverse effects (Galle et al., 1972; Galle and Gove, 1977; Reimer, 1945; Mitchell, 1971; Booth, 1976; Baldassare, 1978; Loo, 1972). We assumed that if crowding had an adverse effect on parental care it would be due largely to the parents' experiencing their children as underfoot, noisy, and demanding. We felt that parents who experienced their children in this manner would be aggressive towards them, unsupportive, and relatively unconcerned with their behavior outside the home. We developed a scale of the extent to which the respon-

Table 5. Overcrowding and Physical Health

Part A: Zero-Order r 's, Betas with Controls for Demographic Variables (β_1), and Betas with Controls for the Demographic Variables and the Other Crowding Variables (β_2)									
	Not Enough Sleep			Catch "Bug" from Others			Must Do Chores		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Number Persons/Number Rooms	.056 ^b	.034 ^{ns}	-.041 ^{*ns}	-.041 ^a	-.026 ^{ns}	.016 ^{*ns}	.163 ^c	.099 ^c	.021 ^{ns}
Demands	.210 ^b	.191 ^c	.166 ^c	-.135 ^c	-.117 ^c	-.104 ^c	.307 ^c	.246 ^c	.224 ^c
Lack of Privacy	.169 ^b	.143 ^c	.078 ^b	-.097 ^c	-.078 ^b	-.035 ^{ns}	.196 ^c	.144 ^c	.034 ^{ns}
Part B: Proportion of Explained Variance That Is (a) Uniquely Explained by the Crowding Variables, (b) Uniquely Explained by the Demographic Variables, and (c) Collinear between the Crowding and Demographic Variables.									
	Cannot Get a Good Rest			Not Cared for by Others			Overall Health		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Number Persons/Number Rooms	.172 ^c	.115 ^c	.021 ^{ns}	.088 ^c	.034 ^{ns}	-.018 ^{*ns}	-.053 ^b	-.049 ^{ns}	-.027 ^{ns}
Demands	.297 ^c	.246 ^c	.183 ^c	.187 ^c	.141 ^c	.125 ^c	-.071 ^b	-.071 ^b	-.057 ^a
Lack of Privacy	.248 ^c	.211 ^c	.120 ^c	.137 ^c	.097 ^c	.044 ^{ns}	-.028 ^{ns}	-.048 ^a	-.041 ^{ns}
Part B: Proportion of Explained Variance That Is (a) Uniquely Explained by the Crowding Variables, (b) Uniquely Explained by the Demographic Variables, and (c) Collinear between the Crowding and Demographic Variables.									
	% Due to Crowding Variables		% Due to Demographic Variables		% Collinear between Crowding and Demographic Variables		Total R^2		
1. Not Enough Sleep	60.0		20.3		18.5		.065		
2. Catch "Bug" from Others	45.2		35.5		19.4		.031		
3. Must Do Chores	39.6		30.6		29.9		.144		
4. Cannot Get a Good Rest	50.8		21.2		28.0		.132		
5. Not Cared for by Others	23.0		56.3		20.7		.087		
6. Overall Health	5.1		94.9		0.0		.118		

^a = $p < .05$, ^b = $p < .01$, ^c = $p < .001$.^{*} Relationship in unpredicted direction.

dents felt harrassed by their children.¹² These items were asked of all respondents with children under 18 in the home ($n = 776$). As is shown in Table 6, all three crowding variables are strongly related to parents feeling harrassed by their children. The respondent was also asked, "How often is it a relief when your children are out of the house? (often, sometimes, never)." As would be anticipated, the crowded respondents indicated considerable relief when the children were out of the house.

In the remainder of this section the questions deal with a specific preselected child. This child was selected by choosing the one whose age was closest to thirteen years. We felt that by focusing on a specific child we would get more exact information, and that the years clustering around thirteen tended to be particularly crucial in parent-child interactions (for arguments supporting these decisions see Booth, 1976; Baldassare, 1978). As parents who experience crowding felt harrassed by their children and tended to have a poor relationship (see Table 4), one would anticipate that they would tend not to be parents who were warm and considerate. The parents were asked: "How often do you physically punish _____? (often, sometimes, never);" and a set of four questions,¹³ which were scaled, dealing with supportive behavior. As Table 6 shows, after controls, P/R and felt demands were significantly associated with physically punishing the child and P/R was associated with a lack of supportive behavior. However, the overall effect of the crowding variables was relatively slight,

particularly in comparison to the effects of the control variables. In short their reported interaction was more supportive than might be anticipated. This suggests that the societal norms regulating the parents' interaction with their children tend to override the effects of crowding. If this is correct, then contrary to Baldassare (1978), children do not suffer disproportionately due to their lack of power. In fact, societal norms may create a form of social immunity for children in a crowded environment and as a consequence children may contribute disproportionately to the experience of excessive demands and lack of privacy by adults.

As an indicator of their awareness of their child's involvements away from the home the parents were asked: "(1) In general, how well do you know _____'s friends (very well, pretty well or not too well), and (2) in general how well do you know the parents of _____'s friends? (very well, pretty well and not too well)." Table 6 shows persons per room has a fairly strong negative relationship with both knowledge of playmates and their parents, while felt demands and lack of privacy have a modest negative relationship with knowledge of playmates.

One of Booth and Johnson's (1975) findings was that children from crowded homes do not do as well in school. A likely reason for this is that such children would not have a place to study. In the interview the parents were asked, "Does _____ have a place at home where he/she can read or study in quiet?" As Table 6 shows, the three crowding variables are strongly related to the lack of such a place, with the relationship being strongest with persons per room. A separate question asking if the child has "a place at home that is away from others where he/she can play or spend his/her time" shows even stronger relationships with the crowding variables.

In summary, in crowded households children are experienced as an irritant and it is a relief when they are out of the home. In such households children lack privacy and a place to study, and it would seem that this would create problems for children and tend to push them out of the

¹² The items were: "(1) How often do your children get in your way? (2) How often do you get upset because your children are too noisy? (3) How often do you feel as if your children are making too many demands? (4) How often do you wish you could get away from your children?" The response categories were often, sometimes, and never.

¹³ The items were: "(1) How often do you have a heart to heart talk with (name of child)? (2) How often do you compliment (name of child), that is, tell him/her how good he/she is or what a good job he/she has done? (3) How often are you able to help (name of child) when he/she is unhappy? (4) How often do you actually tell (name of child) that you love or care about him/her?" The response categories were often, sometimes and never.

Table 6. Overcrowding and Care of Children.

Part A: Zero-Order r 's, Betas with Controls for the Demographic Variables (β_1), and Betas with Controls for the Demographic Variables and the Other Crowding Variables.

	Children Are a Hassle			Relief when Children Out of Home			Physically Punish Child			Supportive of Child		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Number Persons/Number Rooms	.175 ^c	.203 ^c	.094 ^b	.129 ^c	.142 ^c	.075 ^a	.136 ^c	.080 ^a	.061 ^{ns}	-.080 ^b	-.097 ^b	-.096 ^a
Demands	.402 ^c	.385 ^c	.313 ^c	.241 ^c	.219 ^c	.155 ^c	.116 ^c	.095 ^b	.085 ^a	-.012 ^{ns}	-.043 ^{ns}	-.031 ^{ns}
Lack of Privacy	.286 ^c	.280 ^c	.102 ^b	.197 ^c	.189 ^c	.092 ^a	.044 ^{ns}	.047 ^{ns}	-.010 ^{ns}	-.023 ^{ns}	-.020 ^{ns}	.022 ^{*ns}
	Know Child's Playmates			Know Parents of Playmates			Child Has Place to Study			Child Can Get Away from Others		
	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2	r	β_1	β_2
Number Persons/Number Rooms	-.187 ^c	-.171 ^c	-.158 ^c	-.092 ^b	-.107 ^b	-.102 ^b	.239 ^c	.222 ^c	.169 ^c	.368 ^c	.340 ^c	.284 ^c
Demands	-.048 ^{ns}	-.066 ^{ns}	-.011 ^{ns}	-.037 ^{ns}	-.053 ^{ns}	-.035 ^{ns}	.152 ^c	.135 ^c	.010 ^{ns}	.152 ^c	.139 ^c	-.032 ^{*ns}
Lack of Privacy	-.068 ^a	-.082 ^a	-.033 ^{ns}	-.023 ^{ns}	-.032 ^{ns}	.014 ^{*ns}	.235 ^c	.221 ^c	.170 ^c	.279 ^c	.277 ^c	.214 ^c

Part B: Proportion of Explained Variance That is (a) Uniquely Explained by the Crowding Variables, (b) Uniquely Explained by the Demographic Variables, and (c) Collinear between the Crowding and Demographic Variables.

	% Due to Crowding Variables		% Due to Demographic Variables		% Collinear between Crowding and Demographic Variables		Total R^2
	r	β_1	r	β_1	r	β_1	
1. Children Are a Hassle	80.3		11.1		8.6		.198
2. Relief When Children Out of Home	62.8		26.6		10.6		.094
3. Physically Punish Child	9.1		77.7		13.2		.121
4. Supportive of Child	9.8		92.4		-2.2		.092
5. Know Child's Playmates	35.1		54.5		10.4		.077
6. Know Parents of Playmates	22.4		81.6		-4.0		.049
7. Child Has Place to Study	67.6		16.2		16.2		.105
8. Child Can Get Away from Others	76.9		6.6		16.5		.182

^a = $p < .05$, ^b = $p < .01$, ^c = $p < .001$.

* Relationship in unpredicted direction.

home. Furthermore, parents in crowded households are less informed about their children's activities outside the household. In short, there is considerable evidence that for children household crowding results in a very problematic environment. On the other hand the data indicate that crowding is related only weakly to physical punishment and a lack of supportive behavior. On the average the crowding variables independently accounted for 45.5% of the explained variance and the control variables independently accounted for 44.7%, with 8.7% of the variance being collinear.

DISCUSSION

One of the most important characteristics of our sample is that its levels of crowding are typical of those in the United States. In addition the characteristics of the sample are generally similar to those of the population of Chicago. Furthermore, the effects of crowding are linear, that is, the effects are not primarily due to extreme reactions at very high levels of crowding. As a consequence, the results of this study have clear implications for the general population. The analysis suggests the following conclusions:

1. Persons per room (P/R) is a good objective measure of crowding.
2. The experience of crowding largely involves the experience of excessive social demands and a lack of privacy.
3. Crowding results in physical withdrawal, psychological withdrawal, a lack of effective planning behavior, and a general feeling of being "washed out."
4. The experience of crowding is strongly related to poor mental health.
5. The experience of crowding is strongly related to poor social relationships in the home.
6. The experience of crowding is strongly associated with a number of characteristics of poor child care, although it is only moderately associated with poor interaction between parent and child.
7. The experience of crowding is associated with poor physical health by being strongly associated with the following:

generally getting insufficient sleep, catching infectious diseases, having to do chores, being unable to get a good rest, and not being cared for by others when one is sick.

8. The experience of crowding is significantly associated with poor social relationships outside the home, but the effects of crowding are modest.

9. The effects of crowding as measured by P/R tend to be largely explained or interpreted by the experience of excessive demands and lack of privacy. This is particularly true with regard to poor mental health, poor social relationships in the home and poor physical health.

10. The theoretical literature suggests that excessive demands and lack of privacy are the key components of the experience of crowding. In the present data the strength of the effects of these two variables are quite similar, suggesting they both play an important and fairly comparable role in the experience of crowding.

In a number of places we have referred to the relationships with crowding as being fairly strong and the person unfamiliar with the use of multiple regression with individual data may view such statements inappropriate. A great deal of data published by sociologists present relationships that are much stronger; however, these analyses almost invariably use aggregate data which almost always greatly inflates the size of the correlation.¹⁴ Data on individuals are often presented in tabular form and a difference of 20% may look very large, particularly if it is on the end of a continuum (5% vs. 25%). But when such data are analyzed by multiple regression, the relationships rarely exceed those of the present study. As the size of a relationship is determined largely by the nature of the data (whether it is aggregate or individual, the amount of

¹⁴ For example, looking at the effects of crowding in the same city and using fewer variables, r^2 's above .80 were routinely produced with the use of aggregate data (Galle and Gove, 1979). Whereas in the present study we only infrequently have an r^2 over .15.

¹⁵ As the variables used are generally similar the difference in the amount of explained variance is almost entirely due to the use of aggregate as compared with individual data.

variance possible, the skewness of the distribution, etc.) there cannot be a general rule which indicates whether a relationship is strong or weak. Perhaps the best criteria for deciding whether a relationship is strong is by comparing it with other independent variables which we know (or at least believed) to be important (i.e., powerful predictors). Fischer et al. (1975:415) stated the effects of crowding seem "trivial compared to race, sex, education, income and the like." We have taken these four variables and added age and marital status and used them as controls. As our analysis has shown, the experience of crowding, on the average, uniquely explains approximately as much variance as is uniquely explained by the combined effects of these six control variables. In short, crowding does have substantial effects and it is time to turn away from the question of whether it ever has effects to the study of the factors which magnify or minimize its effects. In particular we need to look at (1) the norms that regulate demands and privacy, and how these norms may vary by one's roles and social situation; (2) the effects of household composition on the experience of crowding; and (3) the interaction of household crowding and the macroenvironment.

REFERENCES

- Allee, W. C.
1938 *The Social Life of Animals*. Boston: Beacon Press.
- Altman, Irwin
1975 *The Environment and Social Behavior*. Monterey: Brooks/Cole.
1976 "Privacy: a conceptual analysis." *Environment and Behavior* 8:7-29.
- Anderson, E. N.
1972 "Some Chinese methods for dealing with crowding." *Urban Anthropology* 1:141-50.
- Aries, Philippe
1962 *Centuries of Childhood: A Social History of Family Life*. New York: Knopf.
- Baldassare, Mark
1978 *Residential Crowding in Urban America*. Berkeley: University of California Press.
- Blalock, Hubert
1972 *Social Statistics*. 2nd ed. New York: McGraw-Hill.
- Booth, Alan
1975 "Crowding and social participation." Mimeo.
1976 *Urban Crowding and Its Consequences*. New York: Praeger.
- Booth, A. and J. Cowell
1976 "The effects of crowding upon health." *Journal of Health and Social Behavior* 17:204-20.
- Booth, A. and J. N. Edwards
1976 "Crowding and family relations." *American Sociological Review* 41:308-21.
- Booth, A. and D. R. Johnson
1975 "The effect of crowding on child health and development." Mimeo.
- Bradburn, Norman
1969 *The Structure of Psychological Well-Being*. Chicago: Aldine.
- Brocki, S. and W. Gove
1977 "Sex roles, marital roles and mental health." Mimeo.
- Carnahan, D. L., W. Gove and O. Galle
1974 "Urbanization, population density and overcrowding: the quality of life in urban America." *Social Forces* 53:62-72.
- Chadwick, Bruce A.
1972 "In defense of density: its relationship to health and social disorganization." Pp. 175-93 in Bruce A. Chadwick, Howard M. Bahr and Darwin L. Thomas (eds.), *Population, Resource and the Future: Non-Malthusian Perspectives*. Provo: Brigham Young University Press.
- Cherlin, Andrew and Leo Reeder
1975 "The dimensions of psychological well-being: a critical review." *Sociological Methods and Research* 4:189-214.
- Chombart de Louwe, P. H.
1975 "The sociology of housing methods and prospects of research." *International Journal of Comparative Research* 2:23-41.
- Desor, J. A.
1972 "Toward a psychological theory of crowding." *Journal of Personality and Social Psychology* 21:79-83.
- Edwards, J. N., and Alan Booth
1975 "Crowding and human sexual behavior." Mimeo.
- Fischer, Claude, M. Baldassare, and R. Ofshe
1975 "Crowding studies and urban life: a critical review." *Journal of the American Institute of Planners* 41:406-18.
- Freedman, Jonathan
1975 *Crowding and Behavior*. New York: Viking Press.
- Galle, O., W. R. Gove and J. M. McPherson
1972 "Population density and pathology: what are the relationships for man?" *Science* 176:23-30.
- Galle, O. and W. Gove
1978 "Overcrowding, isolation and human behavior: exploring the extremes in population distribution." Pp. 95-132 in Karl Tauber and James Sweet (eds.), *Social Demography*. New York: Academic.
1979 "Crowding and behavior in Chicago, 1940-1970." In John Aiello and Andrew Baum (eds.), *Residential Crowding and Design*. New York: Plenum. In press.
- Goffman, Erving
1959 *The Presentation of Self in Everyday Life*. Garden City: Doubleday.

- Gordis, L., A. Lilienfeld, R. Rodriguez
1969 "Studies in the epidemiology and preventability of rheumatic fever." Pts. 1, 2. *Journal of Chronic Diseases* 21:645-65.
- Gordon, Robert
1968 "Issues in the ecological study of delinquency." *American Sociological Review* 32:927-44.
- Gove, Walter
1978 "Sex differences in mental illness among adult men and women: an examination of four questions raised regarding whether or not women actually have higher rates." *Social Science and Medicine* 12-3B:187-98.
- Gove, Walter R., Michael Hughes, Omer R. Galle and John D. McCarthy
1973 "Some pathological effects of isolation: a substantive issue where ecological data are appropriate for studying the determinants of individual behavior." Presented at the annual meeting of the American Sociological Association, San Francisco.
- Gove, Walter and Michael Geerken
1977 "Response bias in community surveys: an empirical investigation." *American Journal of Sociology* 82:1289-1317.
- Gove, W. and M. Hughes
1979a "Possible causes of the apparent sex differences in physical health: an empirical investigation." *American Sociological Review* 44:126-46.
1979b "Some comments on the Toronto study." Mimeo.
- Gregor, T.
1977 *Mehinaku: The Drama of Daily Life in a Brazilian Indian Village*. Chicago: University of Chicago Press.
- Hall, Edward T.
1966 *The Hidden Dimension*. Garden City: Doubleday.
- Ilfeld, F.
1976 "Further validation of a psychiatric symptom index in normal population." *Psychiatric Reports* 3:1215-28.
- Johnson, D. R. and A. Booth
1975 "Crowding and human reproduction." Mimeo.
- Levi, L. and L. Anderson
1975 *Psycho-social Stress: Population, Environment and Quality of Life*. New York: Halsted.
- Loo, C.
1972 "The effects of spatial density on the social behavior of children." *Journal of Applied Social Psychology* 2:372-81.
- Loring, W.
1955 "Housing characteristics and social disorganization." *Social Problems* 3:160-8.
- Manderscheid, R.
1975 "A theory of spatial effects." Pp. 75-83 in R. Trappel and F. R. Pichler (eds.), *Progress in Cybernetics and Systems Research*. Vol. 1. Washington, D.C.: Hemisphere.
- Marsella, A., M. Escudero and P. Gordon
1970 "The effects of dwelling density on mental disorders in Filipino men." *Journal of Health and Social Behavior* 11:288-94.
- Milgram, S.
1970 "The experience of living in cities." *Science* 167:1461-8.
- Mitchell, Robert
1971 "Some social implications of high density." *American Sociological Review* 36:18-29.
1975 "Ethnographic and historical perspectives on relationships between physical and socio-spatial environments." *Sociological Symposium* 14:25-40.
- Morgan, L. H.
1881 *Houses and House Life of the American Aborigines*. Washington, D.C.: U.S. Government Printing Office.
- Nie, Norman H., C. Hadlai Hull, Jean G. Jenkins, Karin Steinbrenner and Dale H. Bent
1975 *Statistical Package for the Social Sciences*. 2nd ed. New York: McGraw-Hill.
- Orden, Susan R. and Norman M. Bradburn
1969 "Working wives and marital happiness." *American Journal of Sociology* 74:392-407.
- Rapoport, A.
1972 "Some perspectives on human use and organization of space." Paper presented at Australian Association of Social Anthropologists, Melbourne.
- Reimer, S.
1945 "Maladjustment to the family home." *American Sociological Review* 10:642-8.
- Schorr, A.
1966 *Slums and Social Insecurity*. Washington, D.C.: U.S. Government Printing Office.
- Stokols, D.
1972a "On the distinction between density and crowding: some implications for future research." *Psychological Review* 79:275-8.
1972b "A social psychological model of human crowding phenomena." *American Institute of Planners Journal* 38:72-83.
1976 "The experience of crowding in primary and secondary environments." *Environment and Behavior* 8:49-86.
- Welch, Susan
1975 "Crowding and political behavior." Mimeo.
- Welch, S. and A. Booth
1975 "Crowding as a factor in political aggression: theoretical aspects on analysis of some cross-national data." *Social Science Information* 13:151-62.
- Welford, A. T.
1974 "Stress and performance." Pp. 1-14 in A. T. Welford (ed.), *Man Under Stress*. New York: Halsted.
- Wilner, D., R. Walkley, T. Pinkerton and M. Tayback
1962 *The Housing Environment and Family Life*. Baltimore: Johns Hopkins University Press.
- Wohlwill, J. F.
1974 "Human adaptation to levels of environmental stimulation." *Human Ecology* 2:127-47.

TOWARD A CLASS-DIALECTICAL MODEL OF POWER: AN EMPIRICAL ASSESSMENT OF THREE COMPETING MODELS OF POLITICAL POWER*

J. ALLEN WHITT

Brown University

American Sociological Review 1979, Vol. 44 (February):81-100

The paper outlines the characteristics of three competing models of political power: pluralist, elitist, and class-dialectic. The latter model has been neglected by mainstream sociology, particularly at the empirical level of the community. Using systematic case studies of five related political decisions, this study assesses the relative explanatory power of the three models. The analysis demonstrates that the class-dialectic model is highly useful and that it deserves to be treated as a serious guide to studies of political power.

Over the last two decades a central issue within political sociology in the United States has been the debate over the relative merits of the pluralist and elitist models of the political system. A review of that debate is not the purpose of this paper. Rather, this work aims to accomplish two things. First, it develops a third model of the political system, a class-dialectical model, that has been largely obscured by the pluralist/elitist controversy. Second, this paper attempts to demonstrate empirically the cogency and explanatory power of the dialectic as compared with either pluralist or elitist interpretations.

That the pluralist/elitist debate has tended to eclipse the dialectical model is paradoxical since (as an explicit political model) the latter has the longest historical roots of the three. Having its origin in the works of Marx, it has been elaborated by later writers, particularly contemporary

neo-Marxists. Although certainly not ignored in theoretical work, nor within European sociology, the class-dialectical model has not been treated by mainstream sociology in the United States as a serious contender at the *empirical* level traditionally addressed by most pluralist and elitist studies, particularly the *community* level (cf. Aiken and Mott, 1970; Bonjean et al., 1971; Hawley and Wirt, 1974). There are two reasons for this relative lack of attention given to the class-dialectic model as a guide for empirical research. First, the polarization resulting from the controversy has given rise to the tendency to collapse categories and to treat the class-dialectic and elitist models as equivalent. This blurring of important distinctions between the two models has confused and oversimplified the theoretical issues and has resulted in a general loss of explanatory power of political system models. Secondly, much of the pluralist/elitist debate has been developed around empirical studies of political power at the community level. Researchers who have used the class-dialectic model, focusing usually on the national or international level, have left the important area of community as virtually exclusive domain of pluralist and elitist approaches.¹ Since it appears that the

* Address all communications to: J. Allen Whitt; Department of Sociology; Brown University; Providence, RI 02912.

The following people have read an earlier version of this paper. I am most grateful for their valuable suggestions and insightful criticisms. They are (speaking as one who has always been stuck at the end of the alphabet): T. R. Young, Jane Weiss, Michael Useem, Theda Skocpol, Joyce Rothschild-Whitt, Maynard Robison, Jack Roach, Nelson Polsby, Roland Pellegrin, James Mulherin, Scott McNall, G. William Domhoff, Steven Deutsch, William D'Antonio, Fred Block and Howard Aldrich. In addition, the three anonymous reviewers for *ASR* provided helpful comments.

¹ The main reason for this focus on different levels is that, as Alford (1975:150-2) points out, the class model generally has been concerned with the societal context of action, while the pluralist and elite models

community level has historically become established as the touchstone for developing and testing presumably general models of political power, the class-dialectic model has largely been overlooked by researchers.

This paper proceeds in the following order. First, the three theoretical models are described and clarified. Next, a set of general hypotheses are derived from each model. Finally, a series of case studies of political events is analyzed in order to demonstrate the relative explanatory potentials of the three models.

THEORETICAL CHARACTERISTICS OF MODELS

Table 1 presents in summary fashion the essential characteristics of the pluralist, elitist, and class-dialectic models.² Since

have tended to look at the individual and organizational contexts, respectively. Therefore, the latter two models have been more readily applicable at the level of community power analyses.

² These characteristics represent a distillation of a great deal of literature for each of the three models. As this categorization is a shorthand way of summarizing the basic outlines of the three models, it is not possible here to review this extensive literature, nor to discuss subtle differences, ambiguous cases, and so on. It is also possible in so complex a subject to classify political models in different ways and to emphasize somewhat different characteristics for each of the models. Thus, Alford (1975) refers to "paradigms" instead of models, and labels them pluralist, elite, and class. Although my own classification was developed independently, there are strong similarities. There are, however, at least two major differences between my scheme and Alford's. First, his aim is to categorize the paradigms relating the "relations between the state and the society" (emphasis added). I am not directly concerned with the state, but with how one discovers the *locus of power* in the society or community. Second, my analysis holds that the concept of the dialectical nature of power (stemming from the existence of systemic contradictions) is central to the class-dialectic model. Alford does not present this as a feature of his "class" paradigm.

Esping-Andersen et al., (1976) have developed a classification of four "perspectives," again concerning conceptions of the functioning of the state. These they call the pluralist, instrumentalist, structuralist, and political class perspectives. This classification varies from my own (for reasons that will be explained) but parallels it quite closely, although in this case too my analysis was developed independently. Here they do stress the dialectical nature of power, with class political struggle seen as both limiting

the pluralist model was developed in response to the elitist model it will be convenient to start with the latter model.

The Elitist Model

According to the elitist model, political power is held to be concentrated in the hands of elites who occupy the top positions in large and increasingly centralized institutional hierarchies. Elites tend to be unified in purpose and outlook because of their similar social backgrounds and because of a convergence of interests arising from their positions within dominant social institutions. The goals of elites are reflected directly in the actions of the state which has little, if any, autonomy relative to elite goals and interests. Elites almost invariably get their way whenever important public decisions are made, and social conflicts, when they occur, are managed by elites in such a way as to produce outcomes favorable to their interests. As a consequence, there are no clearly identified limits to elite power and the distribution of power is essentially stable.

The Pluralist Model

Initially developed by Dahl (1961) in its modern and systematic form as a response to Mills (1956) and Hunter (1953), the pluralist model starts with interest groups as the basic features of organized political life. The power (or influence as most pluralists prefer to call it) of private groups is based mainly on the effective political organization of voluntary associations, but also is a function of such

dominant class actions and producing modifications in the structure of the state. The main purpose of the work is to demonstrate that it is possible to think of the state not simply as an instrument of a ruling elite or as determined by systemic contradictions, but as "an object of class struggle" in its own right (Esping-Andersen et al., 1976:190). This is a useful perspective which deserves empirical research. However, for purposes of this work roughly what they call the structuralist and class perspectives will be treated as one category, the class-dialectic. The similarities between the two perspectives are many, and such a distinction is not necessary for the present analysis which is concerned not with the state, but with comparing the class-dialectic model on the one hand with the pluralist and elite models on the other.

Table 1. Characteristics of Models

	Pluralistic	Elite	Class-Dialectic
Basic units of analysis	Interest groups	Institutional elites	Social institutions; social classes
Essential processes	Interest group competition	Hierarchical dominance by elites	Imperatives of social institutions; class domination and conflict
Basis of group power (resources)	Many bases: organizational, governmental, economic, social, personal	Institutional position, common social background, convergent interests	Class position; degree of class consciousness and organization
Distribution of power	Dispersed among competing, heterogeneous groups	Concentrated in relatively homogenous elites	Held by dominant class, but potentially available to subordinate classes
Limits and stability of groups' power	Unstable; limited by democratic value consensus, shifting strength among organized interests and by cross-cutting allegiances	Stable, no identifiable limits to elite domination	Historically contingent; generally stable, but limited by class conflict and contradictions within and among social institutions
Conception of role of the state	State is a broker, able to preserve some autonomy by balancing competing interests	State has little, if any, autonomy; captive of elite interests	State serves interests of dominant class, but requires a degree of autonomy from segments of dominant class in order to act to preserve basis of class hegemony

individual qualities as the political strategies and leadership abilities of party and group leaders. A key concept is competition. Competitive relationships among the many diverse interest groups that make up society, along with the existence of cross-cutting allegiances held by group members, have the effect of dispersing power over a wide range of organized groups. The distribution of power is essentially unstable since interests and alliances are typically rather short-lived, and new groups and coalitions are continually being organized as old ones decline. There are limits on the power of any one group. This is true by virtue of the necessity for compromises with other groups and because of the existence of a basic value consensus which stresses adherence to democratic norms and values. The state is influenced by the demands of powerful organized interest groups but also is able to serve its own ends and to achieve substantial autonomy by operating as a

broker or balancing agent among the competing groups.

The Class-Dialectic Model

The class-dialectic model holds that political processes must be understood in terms of the institutional structure of society and in terms of the relation of social classes to each other. The manner in which the basic institutions of society (especially the economy) are organized has crucial implications for not only the general character of society but also for how classes relate to each other and how political and social power is exercised. The structure of social institutions places restraints and limits on the behavior of groups within the society. In order to comprehend politics, then, one must understand how the imperatives of social institutions shape the behavior of classes and individuals. To focus only upon the

immediate *decisional* and *behavioral* aspects of politics (as do most researchers) is to fall into the trap of what Lukes (1974:22) calls "methodological individualism." One must be aware not only of the possibility of suppression of political issues (Bachrach and Baratz, 1962) by dominant classes, but also of the political implications of strategically allowing the bias of social *institutions* to determine political outcomes with *no* observable decisions or actions, *as such*, being required of dominant political actors. The class-dialectic model argues that one must understand the logic and biases of social institutions as well as the observable political behaviors of social classes and individual actors. There is a mutually reinforcing relationship between social institutions and dominant classes: dominant classes act to preserve those institutions which are the basis of their own hegemony. Institutions shape behavior (of both dominant and subordinate classes) and the dominant class often shapes institutions.

Capitalist societies are characterized by the presence of a dominant class which controls the means of production. This control is the basic resource for power in the society. With it comes the ability to shape the more superstructural institutions of society, including the ability to carry out ideological hegemony (Miliband, 1969) and generally to manipulate the societal context in which political contests are waged. Other resources for power are the degree of class-consciousness and extent of class political organization. The state functions to serve the interests of the dominant class by preserving the bases of class hegemony. However, power is potentially available to the subordinate classes if they become sufficiently class-conscious and politically organized to wrest control or to challenge the control of the means of production. Thus, the power of the dominant class is not absolute. This is even more true because (1) there are not only interclass conflicts, but also intra-class conflicts among capitalists, and (2) there are contradictions within the economic and class structure that produce disruptions which may limit the ability of

the dominant class to act.³ It is this *dialectical*⁴ conception of power, of the relations between social classes, and of history that is the most important difference separating the elitist and class-dialectic models.

Overall the most salient differences among the three models are these. The elitist and class-dialectic models use much larger units of analysis than does the pluralist model. The former two models also hold that power is much more concentrated than is true in the pluralist model. The pluralist model says that power relations are quite unstable while the elitist model presents a very stable picture of power relations. The class-dialectic model conceives of power as much more stable than in the pluralist model, but somewhat *less* stable than in the elitist model. Interestingly, differences concerning the role of the state are clearest between the pluralist and elitist models: the pluralist state has autonomy, the elitist state does not. It is not possible to classify the class-dialectic position on the issue of state autonomy in a simple way,⁵ although it is held that the state serves the interests of the dominant class.

³ For example, an economic crisis may not only erode the economic basis of class hegemony, but also may make social control more difficult by weakening the legitimacy of dominant institutions. O'Connor (1973) argues that the current "budget crisis" of the state may produce these same effects.

⁴ The concept of the dialectic is rooted in the works of Aristotle and certain pre-Socratic philosophers, but is mainly associated with Hegel. Marx substantially modified the concept in his own work (Zeitlin, 1968:89-94). As used here, following essentially the use of Marx, it refers to history as a continual process of unfolding. Social institutions, economic systems, and political institutions contain inherent contradictions. These produce conflicts and strains that eventually lead to the transformation of those institutions and systems. *Contradictions* are thus the engine of social change, and their analysis is central also to understanding the dynamics of political power.

⁵ There is currently a debate among proponents of the class-dialectic view as to how the state should be conceived. One view is close to the power elitist position: the state acts directly in the interests of the dominant class and will not act to damage the interests of any large segment of that class. There is little or no state autonomy. On the other hand, the second view holds that the state *must* have a certain amount

EMPIRICAL APPLICATION OF MODELS

Generation of Hypotheses

We are now in a position to derive the following general hypotheses from each of the models.

Plural hypotheses. If the pluralist model is correct, the study of an important political issue should reveal (1) the active involvement of numerous interest groups, (2) divergent goals and interests among the groups, (3) a vigorous, competitive relationship among the groups, (4) interests and alliances that shift over time, and (5) political outcomes that consistently favor no particular group more than others.

Power elitist hypotheses. If the power elitist model is correct, the study of an important political issue should reveal (1) a high degree of elite involvement, (2) general convergence of interest among elites, (3) elite unity and dominance on the issue, (4) stability of political allegiances, and (5) outcomes that tend to favor elite interests.

Class-dialectic hypotheses. If the class-dialectic model is correct, the study of an important political issue should reveal (1) biases of social institutions that favor outcomes beneficial to dominant classes; (2) evidence of latent class conflict (divergent interests) or observable class conflict over the issue, perhaps including intraclass conflicts among the dominant class, but accompanied by attempts to achieve class unity and cohesion; (3) political alliances and stability of power relations that are historically contingent, reflecting the need to respond to inter- and intraclass conflicts and structural crisis; and (4) outcomes that usually favor dominant class interest, but may

also reflect the power of opposing classes and the limitations imposed by structural contradictions.

The goal here is not to test these hypotheses in a formal sense. A systematic test would require a detailed analysis of a number of important political issues, at different levels of inclusiveness (that is, local, regional, and national), over a significant span of time. That is beyond the scope of this research. Rather, this study seeks to use a set of case studies in a specific issue-area to illustrate the relative usefulness of the three models for understanding political processes at the community level and for providing guides for further theoretical elaboration and research. In short, it aims to be suggestive rather than definitive.

Methods of Research and Selection of Issues

Two related points of contention have been at the center of recent pluralist/elitist controversy: (1) the research methods to be used, and (2) the criteria to be used in selecting a political issue for study. Bachrach and Baratz (1962), for example, have argued that the pluralist decisional method is biased in that it does not allow for the possibility of deliberate suppression of issues. Walton (1970) has shown that the kind of power structures discovered in community studies appears to be partly an artifact of the specific methods utilized, with decisional methods tending to uncover pluralistic structures, and reputational methods finding elite power structures.

The strategy employed here is as follows. Since there is little agreement in the field as to what constitutes an "important" issue, and no clear consensus as to the most appropriate method for doing research, an issue was chosen and methods were utilized which appeared to satisfy the criteria clearly acceptable to at least one of the three perspectives. In this case, it was decided to conform to pluralist methodological requirements. If it is true that the use of pluralistic criteria will bias results toward pluralistic findings, the following caveats must be kept in mind when

of autonomy if it is to avoid getting captured by one group of capitalists. Should this happen, it would not be able to serve class interests in *general*, instead falling prey to intraclass disputes. Thus the state functions to preserve the capitalist system on behalf of the capitalist class. The first view also tends to argue that capitalists are capable of organizing as a class without the need of state assistance. The second view maintains the state is an essential feature of capitalist social organization and domination. Thus, the first view is similar to the elitist model while the second is more like the pluralist model in granting the state a degree of autonomy.

interpreting this study's results. First, should support for the pluralist model emerge, it cannot be ruled out that this is an artifact of study design. On the other hand, should findings support either the elite model or the class-dialectic model, we may have considerable confidence that they are not caused by biases in research methodology.

It was decided to follow the specifications of Polsby (1970:301) in designing this study. He writes:

First, the researcher should pick issue-areas as the focus of his study. Second, he should be able to defend these issue-areas as being very important to the life of the community. Third, he should study actual behavior, either at first hand, or by reconstructing behavior from documents, informants, newspapers and other appropriate sources. . . . The final recommendation is of the same order: researchers should study the outcomes of actual decisions within the community.

The issue area for this study is public transportation politics. The question of the importance of an issue-area under investigation is a crucial one. Transportation can be defended as an important issue on several grounds. The decisions examined herein (see Table 2) involved the allocation of large amounts of public monies among various competing transportation uses. All of the issues had implications for the construction of facilities that would have had considerable impact on patterns of transportation and land use, and on land values and economic activity in large urban areas. Many groups had material interests and stood to gain or lose. These were, in short, not merely "symbolic" issues, but "instrumental" issues that would "convey benefits to particular groups" (Edelman, 1967:2).⁶ Polsby's first and second recommendations are thus met.

The two final recommendations, that actual behavior and decisional outcomes be studied, are met by the research design. The methods employed are similar to

⁶ Also, pluralists treat transportation issues as important: Polsby (1970:298) asserts that importance, and Banfield (1961) uses the Chicago Transit Authority as the basis for a decisional case study.

Table 2. Summary of California Transit Elections

Issue	Date	Area	Proposal	Financing	Contributions		Outcome
					For	Against	
BART	Nov. 1962	Bay Area rail		\$792 million bond issue to be financed out of property taxes	\$203,000 from business	none	passed
Prop. A.	Nov. 1968	L.A. rail & bus		\$2.5 billion bond issue to be financed by sales tax	\$458,000 with 86% from business	\$25,000 from five contributions	failed
Prop. 18	Nov. 1970	Calif. divert 25% of highway funds		none required	\$18,000 in small contributions	\$348,000 from highway lobby	failed
Prop. 5	June 1974	Calif. divert 5-25% of highway funds		none required	\$203,000 with 99% from business	\$1,700 from auto club	passed
Prop. A.	Nov. 1974	L.A. rail & bus		sales tax to match federal funds	\$563,000 with 94% from business	none	failed

those used by Banfield (1961) with some essential modifications. As in Banfield's study, the decisions analyzed here were reported in the news media and constituted matters of public controversy. In fact, all five issues were electoral campaigns. Whereas Banfield based his study on one urban area (Chicago), this study broadens the definition of *community* to include the political boundaries of a state (California). This is done to allow the inclusion of electoral campaigns that were not restricted to large cities (as were Proposition A of 1968 and Proposition A of 1974, both in Los Angeles), or to urban regions (BART campaign of 1962 in the San Francisco Bay Area), but also involved statewide issues (Proposition 18 of 1970 and Proposition 5 of 1974). Together these campaigns constitute a coherent issue-area of interrelated transportation decisions affecting California and its major urban areas: they were the most important *public* decisions concerning transportation in the state between 1962 and 1974. This broader definition of community should pose no problems for pluralist theorists since the inclusion of a larger polity and a geographic and social area of such diversity would be expected to increase rather than decrease interest group plurality (cf. McConnell, 1966).

A more important departure from the Banfield method was to supplement interview data and media analysis with an examination of campaign contribution data. Media coverage was used to provide an initial list of persons and organizations reported to be active in the transportation campaigns. These people were contacted, interviewed concerning their roles in the campaigns, and asked to provide names of other active organizations and people. More interviews were then conducted. After several dozen interviews, it was clear that there was general agreement as to what groups and leaders had been active on both sides of the issues. This information was then checked against records of actual campaign contributions, a technique not used by most decisional researchers.⁷

However, the most important departure from methods such as those used by Banfield is the incorporation of a *longitudinal* study of several related public decisions over a considerable period of time (in this case, twelve years). Instead of studying only one decision occupying a relatively brief span of time, this *historical, multi-decision* approach made it possible to discover the dynamics of political involvement and to isolate patterns of political behavior not apparent over short intervals, as during one political campaign.

There appeared to be reasons for assuming, *a priori*, that the issue-area and specific cases selected for study would provide a rich source of data for explanation by the three models and might, in fact, constitute a crucial test, particularly for the differences between the pluralist model on the one hand and the elitist and class models on the other.⁸

legal and are recorded with the California Secretary of State. This provided a nearly unique opportunity. Contributions data are very important because they clearly show active, material involvement in electoral campaigns, and they provide a means of checking the validity of media and interview accounts identifying support and opposition. Using campaign contribution data as a means of studying the political process is an underutilized research technique, in spite of the general recognition of the significant impact of money in elections (cf. Alexander, 1976). Used together, these three sources of campaign involvement data (media accounts, interviews, and contributions) provided a consistent and comprehensive picture of active supporters and opponents of the issues studied.

⁸ In a number of ways, the issue-area selected for study and the political setting in which it was examined seemed to constitute a crucial test for the pluralist model of politics. Prior to the study, there were accounts of a reputedly powerful highway lobby operating at the national level which was generally successful in promoting legislation and public policies favorable to automobile-highway interests and in blocking development of effective alternative systems of urban transportation (Buel, 1972; Kelley, 1971; Leavitt, 1970; Mowbray, 1969; Snell, 1974). California's own highway lobby had been reported to be one of the most powerful and successful of those operating at the state level (Simmons, 1968). On the other hand, there was also reason to believe that, according to pluralist logic, a countervailing force (Galbraith, 1956) was coming into being that would compete with the highway interests and help to reduce the overwhelming dominance of the automobile as the mode of urban transportation in California. In the state, as was true nationally, there was much

⁷ Fortunately, for this study, California is somewhat atypical in that *corporate* contributions are

The Transportation Campaigns

The five campaigns studied are summarized in Table 2.⁹ Each will be discussed in turn, beginning with the earliest and one of the most important, the San Francisco Bay Area Rapid Transit (BART) campaign of 1962.

Bart campaign. The construction of the expensive and technologically sophisticated BART system was officially authorized by Bay Area voters in a bond election in 1962. However, for many years before that election, the chief force pushing for the establishment of a rail rapid transit system in the Bay Area was the Bay Area Council (BAC). This is an organization of the largest corporations in the Bay Area, headquartered mainly in downtown San Francisco. This advocacy by the BAC is confirmed by interview data, media accounts, by statements from the BAC itself, by previous research (Zwerling, 1974) and by campaign contributions. The BAC companies were early advocates of such a system, were instrumental in getting the California Legislature to create the San Francisco Bay Area Rapid Transit District in 1957, and took a very active part in organizing and financing the 1962 bond campaign for BART. The bonds to construct the system were to be paid for by local property taxes. As can be seen in Table 2, over \$200,000 was

discussion in the 1960s and early 1970s of the destructive aspects of the automobile on urban areas, and citizens' groups and urban politicians were advocating modern transport systems for California's cities. Most importantly, a decision had been made in San Francisco in 1962 to build the first wholly-new transit system in any city in the U.S. in over half a century. As of that time, the Bay Area Rapid Transit (BART) system was said to be the most expensive, privately engineered project in U.S. history. Generating millions of dollars worth of construction work and requiring enormous quantities of expensive, high-technology components, it was clear that transit industry suppliers, for example, stood to gain much from BART's construction. *Was the rise of BART an indication of a nascent rapid transit interest group that would countervail against the economic and political power of the California highway lobby?* If not, what was the nature of the political forces that produced BART? Research was initially undertaken to determine the identity of the interests that actively supported the campaign for BART.

⁹ For a detailed description and analysis of the five campaigns, see Whitt (1975).

contributed in support of the BART campaign, the sum apparently coming virtually exclusively from the BAC COMPANIES.¹⁰ Executives from downtown banks and financial institutions played particularly active roles in organizing the pro-BART electoral campaign. The system was sold to voters by using symbolic appeals: BART would dramatically reduce traffic congestion on major traffic routes, such as the San Francisco-Oakland Bay Bridge, and would alleviate air pollution. Pre-BART planning documents, interviews with business leaders, and publications of business groups after the election make it clear that the main business supporters of BART were more concerned with the system's presumed ability to promote centralized growth and property development in the heart of San Francisco than they were with reducing traffic congestion or air pollution. In spite of the public claims that BART would reduce local dependence on the automobile, there was no organized opposition to BART by the California highway lobby. In fact, at least one major oil company gave money for BART.

Los Angeles campaign of 1968. Six years after the successful BART campaign in northern California, Los Angeles attempted to build a similar rapid transit system. The Proposition A campaign of 1968 (Table 2) proposed to construct a combination rail and bus system that would be financed out of an increase in the local sales tax. The pattern of support was essentially the same as in San Francisco: large businesses near the central area of Los Angeles were the main source of organizational and financial support for the plan. Fourteen percent of the contributions came from heavy construction labor unions and from individuals, but approximately 86% came from business. Of

¹⁰ Contribution data for the BART campaign are incomplete. It was a regional election in the Bay Area and there was no official record of contributions required at that time. What information is available comes from a court deposition (by a chief pro-BART fund raiser) which resulted from a suit against organizers of the BART campaign. The deposition states that \$205,000 was raised in support of BART. Of the several contributors actually named, all were large corporations in the BAC.

this latter sum, industrial corporations gave 28.3%, insurance companies, 12.6%, oil companies, 10.9%, construction, engineering and architectural firms, 9.8%, and banks, 6.4%. This time a very small amount of money was contributed against the measure. It came from a car dealer, a rental agency, a public relations firm, an individual, and a cement company. In this case, the measure failed at the polls.

Proposition 18. The next important transportation issue to be decided by California voters was, unlike the two earlier ones, a statewide issue. Proposition 18 on the November 1970 California ballot proposed that up to 25% of the state highway trust fund, upon approval by voters in local areas, could be used to support public transit systems such as BART. The national and state highway trust funds are said to be jealously guarded by highway-auto interests (e.g., Kelley, 1971; Simmons, 1968) and this campaign was no exception. The California highway lobby¹¹ gave \$348,000 to successfully defeat Proposition 18 (Table 2). Leading contributors were: oil companies (75.1%), automobile clubs (12.9%), highway equipment and construction companies (7.9%), and trucking and taxi companies (1.8%).¹² On the other hand, virtually all of the small amount of money in support of Proposition 18 came from individual contributions. Only two California businesses, Kaiser Industries and Rohr Corporation, both with direct mass transit interests, gave small amounts for Proposition 18. The median contribution for Proposition 18 was \$5; the median contribution against was \$500. Although public transit systems like BART, and like the

system proposed for Los Angeles two years earlier, stood to benefit from the passage of the measure, the companies that had supported these systems in San Francisco and Los Angeles did not contribute for Proposition 18.

Proposition 5. Four years after Proposition 18 went down to defeat, a similar measure (Proposition 5 of 1974) was again presented to California voters. Proposition 5, somewhat milder than Proposition 18, permitted an initial 5% of the fund to be diverted should local voters so decide, with a maximum of 25% after a few years. This time there was almost a complete reversal of the pattern of business opposition that had been revealed in the Proposition 18 campaign (see Table 2). There was no public opposition to Proposition 5 by the highway lobby, and there was support for the measure by large businesses in urban centers (mostly Los Angeles). Contributions came mainly from one oil company¹³ (49%), from insurance companies (15%), other industries (6.5%), and banks (5%). This was in striking contrast to political positions only four years before. The measure passed this time.

Los Angeles campaign of 1974. The final campaign studied was Proposition A of 1974, another version of the unsuccessful Los Angeles campaign of 1968 to create a BART-like system. Again, there was a familiar pattern of support: central city businesses were the leaders in giving more than half a million dollars in support of the system (see Table 2). This time there was no money in opposition. As in the case of the earlier transit campaign in Los Angeles (1968), the Los Angeles electorate turned down the proposal: protransit money was not able to overcome Los Angeles voters' desire to avoid higher local taxes and presumably their pro-automobile attitudes. In each of the other three campaigns (BART, Proposition 18, and Proposition 5), however, the side that contributed the more money was successful.

¹¹ The list of companies contributing money against Proposition 18 matches closely the definition of the highway lobby by Kelley (1971), Simmons (1968), etc.

¹² These and all subsequent contribution data are from the records of the California Secretary of State. There is reason to believe that such records are generally accurate and complete. There are strict state laws requiring detailed reporting of contributions. Also, lists of contributors tend to conform well with interview data and with media accounts of campaign involvement. Nevertheless, these lists should be treated as *minimal* indices of contributions, since if a firm says it gave, it probably did: underreporting is more likely than overreporting.

¹³ The company was Atlantic Richfield, a firm which had recently opened the largest headquarters-office complex in downtown Los Angeles. ARCO's president was a leading organizer of the pro-Proposition 5 campaign.

Evaluation of Hypotheses

The goal now is to determine which of the three sets of hypotheses is supported most strongly by the data from these five political campaigns. Each of the sets of hypotheses will be discussed in turn.

Pluralist hypotheses. At the most simple level, these campaigns appear to provide partial support for the pluralist model. It can be argued that there was active involvement of several groups in these campaigns, groups with divergent interests that engaged in competition to affect public policy. For instance, the pattern of financial support exhibited in the five transit campaigns shows there are two relatively distinct interest groups (i.e., the highway lobby and the downtown transit interests) within the business world which compete to influence public transportation policy. Thus Table 1 shows that the transit interests supported the BART campaign, the two Los Angeles transit campaigns (Proposition A of 1968 and Proposition A of 1974), and the most recent successful attempt (Proposition 5 of 1974) to divert money from the highway trust fund to mass transit. The hand of the opposing highway interests was revealed in the intense campaign waged against the earlier unsuccessful try to divert trust fund monies (Proposition 18 of 1970). That interests and alliances have shifted over the course of the campaigns is indicated by the change in patterns of support between the Proposition 18 and Proposition 5 campaigns. The highway lobby opposed the earlier measure, but did not oppose the later similar Proposition 5. Moreover, while Proposition 18 received no support from downtown business, Proposition 5 got a great deal of support from these interests. It might be reasoned, therefore, that the successful passage of legislation (Proposition 5) to free some highway money for development of urban mass transit is a reflection of the growing power of nonhighway interests to countervail (cf. Galbraith, 1956) against the highway lobby and to force compromises. Political outcomes thus have moved away from almost exclusively favoring highway interests, demonstrating that political

power is pluralistic rather than monolithic.

While this is a plausible argument it does not dig deeply enough beneath the surface of events and tends to overlook some crucial aspects of these campaigns. These shortcomings are made clear when the next set of hypotheses is considered.

Power elite hypotheses. Most of the groups involved in the five campaigns were actually elite groups. With the exception of the organizers of the Proposition 18 campaign (i.e., the Tuberculosis and Respiratory Diseases Association of California, and the League of Women Voters) all of the campaigns studied were initiated, organized, and supported by business elites. Proposition 18 was the sole issue that did not appear to be a business production, and it lost. Thus, there was a high degree of business elite involvement and dominance in these campaigns.

An important issue is the extent to which elite interests converged on these issues (as the elite model would predict) or were divergent (which pluralist theory would predict). Here, the pattern is not as clear-cut as a simple competitive model would indicate. Interests are not the same as behavior. While there undoubtedly were some differences in interests (i.e., downtown businesses that desired new urban transit vs. suburban firms wanting additional circumferential highway development) the firms involved exhibited behaviors which were more noncompetitive than would be expected on the basis of the pluralist model. For example, in each of the five campaigns, business contributions fall into a pattern which is essentially noncompetitive: the money is virtually all on one side or the other of the issue. In spite of whatever conflicts of interest among the firms there may have been, there is no direct competition in terms of campaign money. This is especially clear in the case of the dramatic shift between Proposition 18 and Proposition 5. All business money was *against* Proposition 18 in 1970. Four years later, all business money was *for* the similar Proposition 5. This change was not, however, the result of individual companies switching sides. Those businesses

that opposed Proposition 18 dropped out of sight in the Proposition 5 campaign, while the supporters of Proposition 5 did not give for Proposition 18. Of the 52 firms that had contributed against Proposition 18, only one (i.e., the Automobile Club of Southern California) gave against Proposition 5; of 56 companies that supported Proposition 5, only two (i.e., Rohr and Kaiser, with trivial contributions) had given for Proposition 18. Thus there was a virtually complete reversal of business support for this policy (diversion of highway funds) and a 97.2% (105 of 108) turnover in the firms involved. Such a thoroughgoing change would appear unlikely to be caused by each company making a totally *independent* decision on this policy question.

Elitists might see this pattern as reflecting elite political coordination and unity. Clearly, this noncompetitive pattern does not fit the conventional pluralist model. However, some pluralists might attempt to counter by arguing that this pattern is merely a result of the understandable desire by companies to avoid overt (and costly) conflict. Lowi (1969:295), for example, has observed:

... Competition tends to last only until each group learns the goals of the few other groups. Each adjusts to the others. Real confrontation leads to a net loss for all rather than gain for any. Rather than countervailing power there will more than likely be accommodating power.

It is often in the interests of large businesses to avoid competition with each other, as in the case of the oligopolistic automobile industry (Snell, 1974; Rothschild, 1973). To such industries, lack of competition means operating under external conditions that are more predictable and which allow higher levels of profit.

Moreover, in an interdependent economy of mammoth economic units, many large firms must do business with each other (cf. Averitt, 1968). This mutual dependence can operate as a source of social control, preventing deviance beyond certain boundaries. For example, when a prominent San Francisco business executive and former head of the bond depart-

ment of Bank of America, was asked why San Francisco companies (like Bank of America) that had supported BART did not give money for Proposition 18, he replied:

... Standard Oil and the other oil companies are extremely important customers and they have a lot of clout in many ways. ... You take a banker, and Standard Oil, Union Oil, Shell—you name it—Mobil, Atlantic Richfield are good customers and if they say "We're opposed to this," it's awfully hard for the banker to say, "Well, we're in favor of it."

In order to resolve the issue of whether this noncompetitive pattern is indicative of positive elite coordination (elite model) or merely conflict-avoidance (a variant of the pluralist model) it is once again necessary to dig deeper.

Conflict-avoidance is an essentially passive strategy which requires little or no intralite communication or negotiation. On the other hand, elite coordination would require not only communication networks but also some means of settling differences and working out at least minimal joint plans of action. It is quite clear in the cases under investigation that communication and shared understanding did exist among the potential competitors. Almost without exception, business leaders speak of the "business community." As the former head of the Automobile Club of Southern California, current chairman of a conglomerate, and member of the exclusive Los Angeles Committee of 25, told me:

... I'm sure the business community is not the only group of people who consult with each other. ... It's a natural thing. So you kind of talk to the people you know and say, "What do you think about this?"

This "natural" process of communication, common to many self-identified groups in society, is especially consequential within the business community. As Schattschneider (1935:287) reminds us:

... businessmen collectively constitute the most class-conscious group in American society. As a class they are the most highly organized, more easily mobilized, have more facilities for communication, are more like-minded, and are more accustomed to stand

together in defense of their privileges than any other group.

A recent study by Moore (1977) has demonstrated the extent of elite cohesiveness in the United States. Using data from the American Leadership Study which are based on interviews with 545 leaders of major economic, political, and social institutions, Moore studied communication networks among these elites. The most significant finding for present purposes was that almost one-third of these leaders made up one enormous clique. Members discussed a broad spectrum of issues, resided in various parts of the country, and were generally quite heterogeneous in terms of institutional affiliations.

This evidence of elite cohesiveness would seem to provide a presumptive basis for interpreting noncompetitive patterns in terms of positive coordination. During the transportation campaigns it appears that in spite of initial differences among firms, extensive and rather effective attempts were made to overcome these diverse points-of-view and to achieve unity. As one of Los Angeles's leading businessmen, who had been very active in the transit campaigns in that city, told me:

Some of the people that opposed Proposition 18 also opposed Proposition 5. We couldn't get them to support it. I got into great arguments with some of my friends. In fact, I was president of the Chamber the year of Proposition 5. And I had the president of an oil company and the president of a railroad company opposing me on the fight, but I won the fight before the directors of the Chamber for our position. And when we won the fight both of those guys supported us. . . . When the thing was over with and 60 guys had voted, and there was only—I don't know—five or six votes on their side, they weren't going to fight the trend. . . .

And pointing out the importance to the business community of organizational membership as a mechanism for conflict-resolution and coordination, he added:

Between Proposition 18 and 5 we fought the thing out in the halls of the Legislature and in the Chambers of Commerce and the community organizations, in SCAG [Southern California Associated Governments] and all the rest of the places. . . . That's one of the reasons we belong to organizations like that.

This statement implies that conflicts within the business community over the use of a small portion of the California highway trust fund for rapid transit development were essentially resolved *within* the business community between Proposition 18 and Proposition 5. This could account for the lack of conflict in the *public* political arena: intrabusiness resolution obviates public resolution. The solution of this political conflict reflects the general tendency of the business community to seek consensus. As the former Bank of America executive pointed out in an interview, the pressure for consensus is strong. He used the analogy of the business community as a "club."

Well, if you belong to a club and the membership is up for a vote—if it's a secret ballot of course you don't know, but if there's any leakage that indicates that someone is opposed to someone, then you find that an awful lot of people follow the lead.

This club analogy is particularly appropriate in that, as Domhoff (1970; 1974) has shown, clubs and policy organizations are important in providing places for ironing out differences, discussing policies, and generating social solidarity among elites. A retired business executive, formerly a staff member of the California State Chamber of Commerce, and ex-head of the Western Oil and Gas Association, was asked about the role of face-to-face relationships in working out problems in the business community. He said:

Well, up on Nob Hill there's the Pacific Union Club. It's the most exclusive club in San Francisco and it's just across from the Fairmont and the Mark Hopkins [hotels]. All right, the leaders of San Francisco business go up there for lunch and maybe they have a big round table with twelve guys around the table, guys alone, otherwise they come in sometimes and they bring in guests, and they know each other on a first name basis and they [breaks off] . . . So they work together, partly on the basis of personal friendship, partly on the basis of devotion to the community, and I think they want to protect their own reputations as being cooperative.

This behind-the-scenes conflict-resolution and coordination is revealed more directly in a serendipitous event that occurred during another California politi-

cal campaign not examined in this study.¹⁴ Molotch and Lester (1974) point out the usefulness of studying accidents and scandals as a means of learning about political processes. In the Proposition 9 case, the scandal grew out of a memorandum from the office of the chairman of Standard Oil of California that was copied and given to the sponsors of Proposition 9 (the People's Lobby) by an employee of Standard. People's Lobby made the memo public and its contents were reported by the press. The memo was to the Standard Oil Chairman from a San Francisco lawyer and Sacramento oil lobbyist; the subject was the up-coming campaign over Proposition 9. The lobbyist suggested that a "citizens' committee" should be formed to "front" for the anti-9 forces rather than allow the function to be performed by the California Chamber of Commerce, the California Manufacturers' Association, or the Governor of California. The written comments on the memo (presumably those of the chairman of Standard) indicate approval of the plan. The document also suggests that a public relations firm (a firm well-known to Californians as often being in the employ of ultra-conservative politicians and political groups) be retained to manage the campaign. Attached to the memo was a preliminary campaign plan drawn up by that firm. Among other things it says:

In short, the campaign against the People's Lobby initiative must not be spearheaded publicly by business and industry. *It should be publicly launched by responsible conservationists, by academicians, labor spokesmen, leaders of the Democratic party, and joined at the appropriate time in the appropriate fashion by business, industry, agriculture, and the Republican party leadership.* (emphasis in original)

¹⁴ The People's Lobby, a California public interest group, succeeded in gathering enough signatures to qualify an initiative for the June 1972 California ballot. The complex measure (Proposition 9 of 1972) was oriented toward environmental reform. Its provisions included the phasing out of leaded gasoline, closer monitoring of polluting industries, the banning of offshore oil drilling, a five-year moratorium on new nuclear power plant construction, and the banning of persistent chlorinated hydrocarbons such as DDT. Thus, it was reasonable to expect strong opposition from heavy industry, especially oil and utility companies.

The plan also made clear who would actually be running the campaign—the oil and utility companies of the state:

The involvement of the principal oil companies and the principal utilities . . . *is not a public involvement.* Rather, in a non-publicized sense, it is a means of directing the campaign under the aegis of a *public* citizens committee as outlined. In the doing, total control of the public campaign strategy and direction is maintained. (emphasis in the original)

This "total control" would be achieved by "a small steering committee which would not become public, composed of the delegated spokesmen for the principal utilities and oil companies." As a front, it would be necessary to create a "public citizens' committee" that would be "expanded obviously right up to election day." The public structure was needed in order to avoid "a big business versus people's issues which can only be self-defeating."

The important thing about this memo is not that it reveals a Machiavellian attitude toward the political process. The existence of such attitudes will come as a surprise to few of us. What is important about this memo is that the whole tone of the document *takes for granted* that *total control* of a campaign by big business is entirely *possible*, and does not consider problematic the concurrence of other oil and utility companies, business and industry, the California Chamber of Commerce, the California Manufacturers Association, or even the Governor of the State.

A strong indication of political coordination by business elites emerges from data relating to the transit campaigns studied herein. The pattern of contributions against Proposition 18 and for Proposition 5 provides evidence of a high degree of organization and coordination, suggesting some sort of assessment system based on the value of assets or on sales volume. Table 3 shows the relationship between the amount of gasoline sold by the largest companies in California (including two that did not donate) and the size of their contributions against Proposition 18. It is doubtful that such a strong relationship, in which nearly 90% of the variance is accounted for, would hold in campaigns which are truly spontaneous

Table 3. Oil Company Contributions against Proposition 18 by Amount of Gasoline Sold in California

Company	Gas Sold (1969) ^a (x)	Contribution (y)
1. Standard of Calif.	1,642 million gallons	\$75,000
2. Shell	1,497 million gallons	\$50,000
3. Union	876 million gallons	\$20,000
4. ARCO	824 million gallons	—
5. Mobil	810 million gallons	\$30,000
6. Texaco	689 million gallons	\$20,000
7. Phillips	415 million gallons	\$15,000
8. Gulf	410 million gallons	\$20,000
9. Humble	320 million gallons	\$20,000
10. Signal	242 million gallons	—
11. Douglas	192 million gallons	\$5,000
$r^2 = .76$		
$r^2 = .89$ when ARCO and Signal are deleted.		

^a Source: 1969 gasoline sales figures from California Board of Equalization.

and uncoordinated (and where each does not know the amounts given by others).

An even stronger relationship, a nearly perfect one, is found in the case of bank contributions for Proposition 5. Table 4 shows the total assets of the largest eight banks in the state (all of whom gave) and the amounts contributed. In this case, bank assets entirely account for size of contribution. And even though each contribution is for an unusual amount (e.g., \$1,070), the total for the largest banks is an even \$10,000, suggesting that an overall quota was set for this group with smaller banks assessed on a proportionate basis.¹⁵

This evidence of elite attempts to achieve unity, to coordinate strategies, and even to control political processes behind the scenes is clearly more supportive of the power elite model than the pluralist model. Yet, an even greater understand-

ing of these campaigns can be attained by a consideration of the class-dialectic model. Again, we must dig deeper.

The Class-Dialectic Hypotheses

The class-dialectic model stresses the importance of looking beyond the immediate political events under investigation in order to understand the historical and institutional context within which they take place and by which they are shaped. At the extreme, to focus merely on proximate behavior of individuals and groups without seeking to discover how this behavior articulates with institutional imperatives in the larger society is analogous to trying to understand the behavior of people in a classroom setting without knowing that grading systems, ability testing programs, academic diplomas, social status indicators, and educational requirements for jobs exist.

The influence of social institutions and their biases has been commented upon by Lukes (1974:21-2) who writes:

Decisions are choices consciously and intentionally made by individuals between alternatives, whereas the bias of the system can be mobilized, recreated and reinforced in ways that are neither consciously chosen nor the intended result of particular individual's choices. . . . Moreover, the bias of the system is not sustained simply by a series of individually chosen acts, but also most importantly, by the socially structured and culturally patterned behavior of groups and practices of institutions, which may indeed be manifested by *individuals' inaction*. (emphasis added)

¹⁵ Seemingly, some means had been used to coordinate these two sets of contributions. Interviews uncovered the answer. In this case of the oil companies, the Western Oil and Gas Association (WOGA) was the agent for coordination. The General Manager of WOGA calculated the "fair share" of oil contributions based on "gallons" of gasoline sold in California. He then told the companies what amounts would be appropriate, "if they were going to give." This prorating of contributions by WOGA has been going on at least since the 1940s, according to a former WOGA general manager.

The same function was performed for the banks by their clearing house (formally organized to settle accounts between banks, as by exchanging checks drawn on other member banks, etc.). An executive of Wells Fargo Bank told me that it has long been a practice for the banks' clearing house to decide how much to give on an issue, with the banks then contributing "in relation to their size."

Table 4. Bank Contributions for Proposition 5 by Total Assets

Bank	Assets* (x)	Contribution (y)
1. Bank of America (SF)	\$49.0 billion	\$4,210
2. Security Pacific (LA)	13.4 billion	1,610
3. Wells Fargo (SF)	11.6 billion	1,280
4. Crocker National (SF)	9.5 billion	1,070
5. United California	9.0 billion	920
6. Union Bank (LA)	4.8 billion	410
7. Bank of California (SF)	3.0 billion	290
8. First Western (LA)	1.4 billion	210
		\$10,000
$r^2 = .98$		

* Source: Bank assets from the Los Angeles *Times* (5/12/74) annual roster of California businesses.

Lukes criticizes most studies of power as being too "behavioral," thus not sufficiently attuned to the influence of the bias of social institutions. It is the bias of political, economic, and cultural systems that partly determines what we will see as political problems and opportunities, what are likely to be admitted to the agenda as formal issues (cf. Bachrach and Baratz, 1962) and what will seem to us as politically possible or impossible. In some cases, such as those analyzed by Weinstein (1968) and Domhoff (1970), certain groups—particularly dominant classes¹⁶—are able to make their own imprint on the institutions of the day. It is this relation between political processes and social institutions that the class-dialectic model aims to explicate.

Let us apply this perspective to the cases under study here. This requires, of course, that we look at a larger context than was true in the case of the pluralist and elite models. This difference in inclusiveness is a central factor separating the class-dialectic model from the other two.

Our society has a market economy in which most major decisions concerning the production of material goods and services, investments to be undertaken, and levels of profit to be obtained are in the hands of private groups and individuals. In contrast to more planned economies, problems of coordination and overall societal rationality result. Certain contradictions are built-in.

The case of transportation in the U.S. is

illustrative. There is a contradictory aspect to transportation in that it is treated primarily as a private good rather than a public service. The nation is overwhelmingly dependent on the private automobile for getting around, yet this very dependence has created the familiar problems of traffic congestion, excessive use of energy, air pollution, thousands of deaths and injuries each year, the necessity for enormous sums of money to be spent on streets and highways, and has exacerbated the trends toward suburbanization and central city decline. Although the production of private automobiles and related goods (e.g., oil and gasoline, tires, steel) is at the heart of the economy, we have paid high social costs (Mowbray, 1969; Kapp, 1971) and have been subjected to social irrationalities of a serious nature (Downs, 1970; Mumford, 1963; Snell, 1974). There is a contradiction between the ardent promotion and selling of automobiles as apparent individual solutions to transportation needs (which from the lone consumer's viewpoint may appear efficient and desirable) and societal needs for rational, planned, peaceful cities, and efficient and equitable public transportation. Because the private economy looks upon transportation primarily as an opportunity for profits, socially irrational and contradictory developments arise. For example, during the time that the initial plans were being laid for BART in the San Francisco Bay Area, the then-existing electric trolley lines were being dismantled by a consortium of automobile and bus interests (Zwerling, 1974; Barnes, 1973:18). During the 1930s, and 1940s, and 1950s, similar events were taking place in

¹⁶ The empirical usefulness of Marxist class categories has recently been demonstrated by Wright and Perrone (1977).

more than 45 cities around the country (Snell:1974:). These rational, efficient systems (cf. Crump, 1962) were destroyed primarily because a profit could be made in so doing.¹⁷ Now when it is recognized that there is a need for such systems in our cities, new systems like BART are not only prohibitively expensive, but also are not designed to accomplish the same purpose.

As pointed out earlier, a good part of the motivation of the firms that supported the construction of BART in San Francisco and similar systems in Los Angeles had not so much to do with social rationality as with profit. Molotch (1976) has shown how cities can be seen as economic "growth machines" in which property holders, businesses and politicians tend to single-mindedly promote population and economic growth as a means of enhancing land values and sales. The expectation among Bay Area Council member firms of increased central city growth appear to have been of great importance in the case of BART (Whitt, 1975). The system has been heavily criticised as not providing adequately for the general transit needs of Bay Area residents, particularly those who are most in need. BART represents a contradiction because it was developed primarily to augment the private profits of San Francisco's major businesses and not to effectively deal with the many problems created by the untrammelled development of the profitable private automobile.

Such piecemeal attempts to deal with contradictions also are increasingly running afoul of another contradiction in the society. O'Connor (1973) has demonstrated how the current budget difficulties of state and local governments can be traced to structural contradictions in the economy. Large firms such as those that supported BART favor creating new

transit systems, but of course have no intention of paying the entire cost for the construction of these very expensive systems. Government is a logical source of funds. However, the federal government is increasingly hard-pressed due to the budget crisis and has become more reluctant to fund large and costly BART-like projects. The solution attempted has been to try to get local citizens to pay an increasing share through sales taxes (as in the two Los Angeles cases) or property taxes (as in San Francisco), both kinds of taxes being generally recognized as regressive. Not surprisingly, there often has been voter resistance of the kind that defeated the two Los Angeles plans.

This need, from the standpoint of dominant classes, for a certain level of acquiescence on the part of subordinate classes leads to the institution of various methods aimed at attaining social control, mass persuasion (cf. Schiller, 1969), and the maintenance of the legitimacy (Miliband, 1969) of present institutional structures upon which class hegemony is based. But as O'Connor (1973) has demonstrated, the maintenance of class-based institutions may be contradictory to the maintenance of legitimacy.¹⁸ Therefore, inherent contradictions and the awareness of benefits or costs which are differentiated by class may place limits on possible actions by the dominant class. For example, the awareness by urban dwellers that they will be paying for new, expensive urban transit systems which they often feel will benefit others more than themselves sometimes leads to the rejection of the planned systems. In short, mass persuasion does not always work, just as structural contradictions cannot always be overcome.

In contrast to the elite model, dominant classes do not always win each battle.

¹⁷ Snell (1974:30-1) indicates how National City Lines and other companies organized by General Motors, Standard Oil of California, and Firestone Tires bought up existing electric streetcar companies, tore up the tracks, and replaced the streetcars with buses. Then converted systems would be resold to local concerns with the agreement that only GM buses, fuel produced by Standard Oil, and Firestone tires be used in the new systems. The conversion of over 100 systems produced large and continuing profits.

¹⁸ In their excellent elaboration and refinement of O'Connor's perspective, Friedland et al. (1978) argue that the contradiction between accumulation and legitimation may not be inherent and continuous. For example, they point out that:

Much of the time, perhaps most of the time, a stable and prosperous economy is also a precondition of the legitimacy of the state, for the breakdown of the accumulation process leads to the loss of jobs, declining real income, and the series of dislocations which give rise to political discontent. (1978:220)

There are also *intra*class differences and conflicts which must be dealt with. Many potential and actual conflicts emerged during the transit campaigns. Not all business executives were equally enthusiastic about new transit systems, but, even more clearly, they were not agreed about whether the *highway fund* should be used to pay for new systems. Hence the extensive behind-the-scenes conflicts and negotiations over the merits of Proposition 18 and Proposition 5, both of which proposed to tap in minor ways the state highway trust fund. In this case the business class was able to pull together and achieve at least a degree of unity and coordination on this potentially divisive issue. Apparently, there was great motivation to strive for class unity. As one business executive told me, businessmen "... want to get along as a community ... and they don't want to go off in different directions." As in the elite model, there is emphasis here on attaining unity, but the class-dialectic model holds that, due to class conflicts and contradictions, unity is not always possible. Also, the latter model points to the seeking of legitimacy as a further restriction on the actions of the dominant class. For example, the search for legitimacy is revealed in the Standard Oil memorandum which was quoted earlier. At one point, the memo warns that it is necessary to set up a public committee to "front" the campaign for the "utilities and the oil industry" in order to avoid creating a "big business versus people's issue which can only be self-defeating."

Contradictions and conflicts are never static. As Chambliss (1979) compellingly argues, the "solution" of one contradiction often leads to the emergence of others. This is the essence of the dialectical conception of history and political power. For example, the introduction, mass production, and intensive promotion of the private automobile (cf. Flink, 1970; 1975), produced, in the words of Baran and Sweezy (1966:219-20):

... a radical alteration of economic geography with attendant internal migrations and the building of whole new communities; each [i.e., the steam engine, the railroad, and the automobile] required or made possible the production of many new goods and services;

each directly or indirectly enlarged the market for a whole range of industrial products.

This was very profitable for American industry and provided a base for many large fortunes and the growth of privileges in certain segments of the dominant class (Carnegie in steel, Ford in autos, Rockefeller in oil, etc.). But in recent years the possibilities in these auto-related areas have begun to dim. Rothschild (1973) argues that the auto industry is now in a state of stagnation and decline. Contradictions and social costs of automobile production and use have become manifest. The decline of this and related industries, the energy crisis, the loss of viability of central cities (particularly in the Northeast), the challenge of foreign competition, and the demands of people for better public transportation have all forced a readjustment and response by the dominant class. The former "solution" of vast industrial expansion, healthy profits, and increased class privilege which attended the rise of the private automobile has revealed other contradictions. No solution lasts forever. Now something must be done to "save" the valuable central city as a producer of profit, and to ease some of the most damaging impacts of the automobile. Such systems as BART are supported by dominant business classes as a way out. That they do not really work so well and are very costly is now being realized. Another series of contradictions awaits.

It is this broader context which allows us to more fully appreciate the political events herein analyzed. Now we see more of the motivation behind such campaigns, the contradictions and conflicts manifested therein, and the reasons for the previously difficult-to-explain pattern of political contributions. We can see these political events in the context of the contradictions which the dominant class must face: (1) the market economy vs. the need for some planning, (2) the selling of transportation as a private good vs. the requirement for public services, (3) the competition among cities and among capitalists for growth-generating developments vs. coherent structure and regularity in urban development, (4) the need to construct new urban transit systems vs.

the budget crisis and occasional mass resistance, (5) the desire for class hegemony vs. the requirements of legitimacy and mass persuasion, and (6) the desire for class unity vs. the divisive tendencies of intracapitalist class differences and conflicts. I would argue that an appreciation of these six factors, to which the class-dialectic model sensitizes us, adds much to our understanding of the political events analyzed here. Rather than seeing these events as simply the clash of organized interest groups pursuing their own goals as the pluralist model would hold, or as the reflection of an elite working its will, we see that the situation is more complex than either of these models would lead us to believe. There is both competition and cohesion here, but that is not the real point. It is most important to understand that the capitalist class must respond to contradictions and crises in the economy, in the cities, and in the polity. Continued class hegemony and the legitimacy of present social institutions require class-based action. Yet, those actions must contend with numerous contradictions. New ones arise as old ones are vanquished. The coming of the automobile solved certain problems but created others. These transit campaigns upon which this paper has focused were rather ineffectual attempts to deal in a small and local way with some of the more glaring aspects of these contradictions. That actions appeared somewhat contradictory, based on a strange mixture of cooperation and conflict is not surprising.

In conclusion, the following points should be made. It is possible to analyze political processes on several levels. As the class-dialectic model uses the most general level of the three models, various aspects of the pluralist and elite models are not incompatible with the former. The pluralist model is fairly accurate as far as it goes, but as I have tried to show here, it does not go nearly far enough. The elite model is more adequate in that it does begin to more fully appreciate the institutional influences that shape political behavior. But it too does not go far enough because it does not envisage the complexity of the structural contradictions to which the dominant class must respond

and does not recognize the inherent dialectical nature of power.

This paper has attempted to suggest the empirical usefulness of the class-dialectic model of political power, a model which has not been taken seriously at the community level of analysis. I maintain that an empirical and theoretical elaboration of this perspective can help us to get beyond the longstanding pluralist/elitist controversy and can sharpen our understanding of politics at the local level as well as the national and international. It is time for an integration of the various levels of analysis. The class-dialectic model can give us that integration.

REFERENCES

- Aiken, Michael and Paul Mott (eds.)
1970 *The Structure of Community Power*. New York: Random House.
- Alexander, Herbert
1976 *Campaign Money: Reform and Reality in the States*. New York: Free Press.
- Alford, Robert
1975 "Paradigms of relations between state and society." Pp. 145-60 in L. Lindberg, R. Alford, C. Crouch, and C. Offe (eds.), *Stress and Contradiction in Modern Capitalism*. Toronto: Lexington.
- Averitt, Robert
1968 *The Dual Economy: The Dynamics of American Industry Structure*. New York: Norton.
- Bachrach, Peter and Morton Baratz
1962 "Two faces of power." *American Political Science Review* 56:947-52.
- Banfield, Edward
1961 *Political Influence*. New York: Free Press.
- Baran, Paul and Paul Sweezy
1966 *Monopoly Capital*. New York: Modern Reader Paperbacks.
- Barnes, Peter
1973 "So-so rapid transit." *New Republic* 169:15-23.
- Bonjean, Charles, T. Clark, and R. Lineberry (eds.)
1971 *Community Politics: A Behavioral Approach*. New York: Free Press.
- Buel, Ronald
1972 *Dead End: The Automobile in Mass Transportation*. Baltimore: Penguin Books.
- Chambliss, William
1979 "Contradictions and conflicts in law recreation." In S. Spitzer (ed.), *Annual Review of Sociology of Law*. Greenwich: Jai. In press.
- Crump, Spencer
1962 *Ride the Big Red Cars*. Los Angeles: Trans-Anglo Books.
- Dahl, Robert
1961 *Who Governs? Democracy and Power in an American City*. New Haven: Yale.
- Domhoff, G. Williams
1970 *The Higher Circles*. New York: Vintage.

- 1974 *The Bohemian Grove*. New York: Harper Colophon.
- Downs, Anthony
1970 *Urban Problems and Prospects*. Chicago: Markham.
- Edelman, Murray
1967 *The Symbolic Uses of Politics*. Chicago: University of Illinois.
- Esping-Andersen, Gosta, Roger Friedland, and Erik Wright
1976 "Modes of class struggle and the capitalist state." *Kapitalistate* 4-5:186-220.
- Flink, James
1970 *America Adopts the Automobile, 1895-1910*. Cambridge, Ma.: MIT.
1975 *The Car Culture*. Cambridge, Ma.: MIT.
- Friedland, Roger, Frances Piven, and Robert Alford
1978 "Political conflict, urban structure, and the fiscal crisis." Pp. 197-225 in Douglas Ashford (ed.), *Comparing Public Policies: New Concepts and Methods*. Sage Yearbook in Politics and Public Policy. Beverly Hills: Sage.
- Galbraith, John Kenneth
1956 *American Capitalism: The Concept of Countervailing Power*. Boston: Houghton Mifflin.
- Hawley, Willis and Frederick Wirt (eds.)
1974 *The Search for Community Power*. Englewood Cliffs: Prentice-Hall.
- Hunter, Floyd
1953 *Community Power Structure: A Study of Decision Makers*. Chapel Hill: University of North Carolina Press.
- Kapp, K. William
1971 *The Social Costs of Private Enterprise*. New York: Schocken.
- Kelley, Ben
1971 *The Pavers and the Paved*. New York: Brown.
- Leavitt, Helen
1970 *Superhighway-Superhoax*. Garden City: Doubleday.
- Lowi, Theodore
1969 *The End of Liberalism*. New York: Norton.
- Lukes, Steven
1974 *Power: A Radical View*. London: Macmillan.
- McConnel, Grant
1966 *Private Power and American Democracy*. New York: Vintage.
- Miliband, Ralph
1969 *The State in Capitalist Society*. New York: Basic.
- Mills, C. Wright
1956 *The Power Elite*. New York: Oxford University Press.
- Molotch, Harvey
1976 "The city as a growth machine: toward a political economy of place." *American Journal of Sociology* 82:309-32.
- Molotch, H. and M. Lester
1974 "News as purposive behavior: or the strategic use of routine events, accidents and scandals." *American Sociological Review* 39:101-12.
- Moore, Gwen
1977 "The structure of elite networks in the United States." Unpublished paper. Department of Sociology, Cornell University, Ithaca.
- Mowbray, A. Q.
1969 *The Road to Ruin*. New York: Harcourt, Brace.
- Mumford, Lewis
1963 *The Highway and the City*. New York: Harcourt, Brace.
- O'Connor, James
1973 *The Fiscal Crisis of the State*. New York: St. Martin's.
- Polsby, Nelson
1970 "How to study community power: the pluralist alternatives." Pp. 297-304 in M. Aiken and P. Mott (eds.), *The Structure of Community Power*. New York: Random House.
- Rothschild, Emma
1973 *Paradise Lost: The Decline of the Auto-Industrial Age*. New York: Random House.
- Schattschneider, E. E.
1935 *Politics, Pressures and the Tariff*. New York: Prentice-Hall.
- Schiller, Herbert
1969 *Mass Communications and American Empire*. Boston: Beacon.
- Simmons, Bob
1968 "The freeway establishment." *Cry California* 3:31-8.
- Snell, Bradford
1974 *American Ground Transport*. Report to Subcommittee on Antitrust and Monopoly, Committee on the Judiciary, U.S. Senate. Washington: U.S. Government Printing Office.
- Walton, John
1970 "A systematic survey of community power research." Pp. 443-64 in M. Aiken and P. Mott (eds.), *The Structure of Community Power*. New York: Random House.
- Weinstein, James
1968 *The Corporate Ideal in the Liberal State*. Boston: Beacon.
- Whitt, J. Allen
1975 *Means of Movement: The Politics of Modern Transportation Systems*. Ph.D. dissertation, Department of Sociology, University of California, Santa Barbara.
- Wright, Erik and Luca Perrone
1977 "Marxist class categories and income inequality." *American Sociological Review* 42:32-55.
- Zeitlin, Irving
1968 *Ideology and the Development of Sociological Theory*. Englewood Cliffs: Prentice-Hall.
- Zwerling, Stephen
1974 *Mass Transit and the Politics of Turmoil*. New York: Praeger.

PARADIGMS IN EVOLUTIONARY THEORY: THE SOCIOBIOLOGICAL MODEL OF NATURAL SELECTION*

JILL S. QUADAGNO

University of Kansas

American Sociological Review 1979, Vol. 44 (February):100-109

One of the few theories in the history of ideas which has been held in common by both the social and natural sciences as well as philosophy is that of evolution. As a scientific paradigm evolutionary theory can be analyzed according to five principles: change, order, direction, progress and perfectibility. Darwinian evolutionary theory was based on the idea that change in forms occurs through the mechanism of natural selection. Darwin's central problem was to explain the apparent instability of species, which he observed in fossils. In contrast, the central problem of sociobiology has been to explain the evolution of social behaviors, including complex human social behaviors. A key issue has been the origin of altruism. In explaining the origins of social behavior, sociobiologists have altered the paradigm of evolutionary theory as originally formulated by Darwin in several ways. First, they have argued that the principal effect of natural selection must be the maximization of reproduction. Second, the concept of fitness has been altered; species typical behavior has come to be defined as fit behavior. Third, there has been an increased stress on the adaptive nature of behavior, with the subsequent effect that nonadaptive evolution has been ignored. Two specific examples of sociobiological reasoning which both purport to explain altruism, kin selection and reciprocal altruism, provide an example of tautological reasoning. In terms of both logic and method, sociobiology cannot be applied to the analysis of complex human social behavior: Sociobiology is based on a preconceived notion of change leading to a necessarily adaptive order in which the morality of human consciousness is replaced by the morality of gene survival.

Until recently evolutionary theory was reserved for the analysis of forms, while human social behavior remained largely within the domain of the social sciences. Sociobiology is application of the laws of natural selection to social behavior, including human social behavior. Sociobiological theory states that genes provide the information that structures social behavior.

Sociobiologists, issuing a challenge to social scientists, claim that we will eventually be subsumed or, in the words of E. O. Wilson (1975:4), "biologized" by this developing discipline. Most of the responses thus far from social scientists (as well as others in danger of being subsumed) have taken one of two critical

forms, either sociopolitical or scientific. This paper will not address its critique to either of those two levels of criticism directly, although flaws in the methods of sociobiology will be discussed. Rather the scope of the analysis will be broadened by examining sociobiology as a set of philosophical principles which organize the world in a particular way. Attention will first be directed toward an analysis of the principles of evolution as a general world view. Then the Darwinian formulation of organic evolution will be presented. Finally, the interpretation of evolutionary theory which characterizes sociobiological thought will be critically assessed. Throughout, the usefulness of applying evolutionary theory to complex human social behavior will be questioned.

* Address all communications to: Jill S. Quadagno; Department of Sociology; University of Kansas; Lawrence, KS 66045.

I would like to thank Arthur Caplan, David Matza, Allan Mazur and George Ritzer for comments on an earlier draft of this paper. I would also like to acknowledge an award from the General Research fund of the University of Kansas. This paper was presented to the American Sociological Association, San Francisco, 1978.

THE PARADIGM OF EVOLUTIONARY THEORY

Thomas Kuhn's influential book *The Structure of Scientific Revolutions* introduced an awareness that much of what we accept as "truth" in science is, in fact, a reflection of an acceptable world view,

induced by anomalies in previous systems, made palatable due to compatibility with political and economic belief systems. Each paradigm tells us "different things about the population of the universe and about that population's behavior" (Kuhn, 1970:103). Scientific theories, as they evolve, represent shifts in vision, perceptual transformations, in which "scientists see new and different things when looking with familiar instruments in places they have looked before" (Kuhn, 1970:111). As a paradigm each theoretical system tells scientists which problems to study and how to study them.

One of the few theoretical systems in the history of ideas which has been held in common by both the social and the natural sciences as well as philosophy is that of evolution. Evolution is a world view which embodies many principles, not all of which are admitted in its various uses. Even those concerned with organic evolution, which is its most commonly known form, are unable to agree on the essence of evolution (Lewontin, 1968:202). In the evolutionary world view as a general paradigm, a hierarchy of principles can be identified. These include change, order, direction, progress and perfectibility, with each principle being present in some but not all theories of evolution.

The idea of evolution in its simplest form envisions a system in a continual state of change. This is opposed to a nonevolutionary world view in which change occurs as a result of special intervention of unique forces in an otherwise static system. To this, in many evolutionary schemes, is added the principle of order, that is, a change from one order to a different order. The fact of order is based on a preconception. We cannot know order from chaos unless we have some preconceived idea of how order can be recognized. As Lewontin (1968:203) states:

The demand that an evolutionary process create order or at least that there be a change from one order to a different order, shows clearly that evolution, in this sense, is neither a fact nor a theory, but a way of organizing knowledge.

Direction as a principle in evolution re-

fers to some natural linear order which can be described on an ascending or descending line. Evolutionary theories which incorporate direction must be able to construct a system in which there is a tendency to increase or decrease. For instance, human cultures have been ordered in a linear direction based on modes of organization from hunting and gathering to agriculture, from agriculture to industry (Lewontin, 1968:204). The scale has varied, based on, for example, the degree of the division of labor (Durkheim) or degree of complexity (Spencer). In either case, a recognizable linear order has been devised.

Evolutionary theories which include a moral tone in their description of direction can be said to incorporate the principle of progress as well. The idea of progress refers to more than just change from, say, simplicity to complexity, for there is included some sense that complexity is better. Finally, in a few evolutionary theories the notion of perfectibility in the system is included. The inclusion of this utopian element is rare, for most evolutionary processes are envisaged as having no particular perfect end goal.

THE DARWINIAN MODEL OF EVOLUTION

When Darwin introduced his theory of organic evolution by means of natural selection to the scientific community in 1859 with the publication of *The Origin of Species*, the concept of evolutionary change had already been present in philosophy and the natural sciences. By extending it to organic matter, the evolution of forms of species, Darwin touched on the origins of human beings and challenged their preordained supremacy in the universe. In this sense, Darwinian theory represented a major paradigm shift over earlier theories of organic evolution. Pre-Darwinian evolutionary theories such as those espoused by Lamarck, Chambers, Spencer and the German *Naturphilosophen* had taken evolution to be a goal-directed process, incorporating the principles of direction, progress and perfectibility. The "idea of man" was believed to have been present from the first

creation of life and that idea provided the direction to the entire evolutionary process (Kuhn, 1970:172). In *The Origin of Species*, Darwin recognized no goal set by God or nature; through the mechanism of natural selection, continual change led to an unpredictable new order.

The Darwinian formulation predicts that change will occur and will continue to occur, but it does not predict the content of that change (Couch, 1978:24). Forms change in response to changes in the environment, producing new forms. This change is not predictable, because environmental changes are not predictable. The mechanism of change which leads to new forms is natural selection. Natural selection was a simple concept implying that differential survival led to differential reproduction.¹ In this sense, it was a minimal principle. Selection becomes positive the moment any relative advantage is produced (Sahlins, 1977:75). Species adapt to ecological niches in the environment and obtain a positive advantage over conspecifics by producing more offspring that survive based on prevailing environmental circumstances. In Darwin, order as a principle is subsumed under the principle of change. Organic evolution is a change in the genetic composition of populations. Thus, order merely is implied in the taxonomic comparison of forms and has no independent ontological status as in movement out of chaos.

While there is an identifiable linearity in Darwin's view of evolution, it is branched rather than being merely linear and has no *necessary* direction. In general, organic evolution proceeds from simplicity to complexity; organisms evolve from less complex to more complex forms. However, overall movement toward greater complexity is not an inherent part of the Darwinian paradigm (Couch, 1978:29). In fact, Darwin recognized that changes from complex to more simple structures occurred, even though evolution was more likely to proceed in the other direction. Darwin (1859:171, 340, 443, 456) essentially considered evolution to be any

hereditary change occurring within species over time (descent with modification), regardless of the direction of change.

In contrast to earlier theories, Darwin clearly and specifically rejected progress and, by implication, perfectibility as principles inherent in evolutionary change (Freeman, 1974:218). Numerous statements written as early as 1844 can be found to support this contention. In a letter to the American zoologist, Alpheus Hyatt, at the end of 1872, Darwin concluded, "After long reflection I cannot avoid the conviction that no innate tendency to progressive development exists . . ." (cited in Freeman, 1974:218). In another letter to J. D. Hooker he wrote, "Heaven forbid me from Lamarck nonsense of a 'tendency to progression' . . ." (Freeman, 1974:213). If there was any conception of progress present, it was progress for any group of organisms toward better adaptation to ways of life available for that group. Progress for a crab was not to become more human, but to become a better crab (Simpson, 1974:229). Darwin has been misunderstood on this point by some due to his use of the term *survival of the fittest* which could be read to imply progress. It should be recalled that this term was coined by Spencer (1864) and was not adopted by Darwin until the fifth edition of *Origin of Species*. Spencer, criticizing the term *natural selection* as unnecessarily personifying nature, preferred *survival of the fittest* as a plain expression of fact. Darwin eventually acknowledged the validity of Spencer's argument and incorporated the phrase into his text (Merchant, 1916:174-5).

Thus, the original formulation of evolutionary theory by Darwin saw randomly occurring continual change in nature leading to a new order of forms fitting ecological niches in the environment. While there is an implied linearity in the ordering of species, no extrapolation was made regarding the movement of species in either direction on that linear scale. Process was only perceived as better adaptation. Since neither individual nor environmental conditions are predictable, the hallmark of

¹ The term *natural selection* was used in contrast to artificial selection.

Darwinian evolutionary change was indeterminacy.

THE SOCIOBIOLOGICAL MODEL OF NATURAL SELECTION

The view that evolutionary theory is a paradigm within the biological sciences representing a particular world view is not, of course, a statement of fact, but a perspective, which can be accepted or rejected, depending on how one prefers to view the nature of science. Sociobiologists, as well as other evolutionary theorists, often prefer to see scientific knowledge as accumulated facts. For example, Barash (1977:9), rejecting the basis of scientific inquiry as paradigmatic, states that evolutionary theory is "not just a theory; it is probably as close to truth as we can get in natural science." Along with Wilson, Alexander and other sociobiologists, Barash has accepted a set of assumptions regarding the meaning and status of evolutionary theory. As we shall see later, this determines not only which questions are asked but also influences how they are to be answered, placing limitations on the potentially vast array of conclusions available.

Darwin's theory of natural selection arose from his observations of variations of forms of fossil animals as they occurred in slight succession on each of the islands of the Galapagos archipelago (Barlow, 1958:118-9). During his naturalistic observations, he noted the apparent instability of species, which led to his eventual conclusion that species were not fixed and intransitive but evolved.² Darwin's central problem was to explain this instability; in contrast, the central theoretical problem of sociobiology has been to explain altruism (Wilson, 1975:3).

Altruism and the Development of Sociobiology

The problem initially arose from a debate between group selectionists and indi-

vidual selectionists who were attempting to explain the evolution of altruism. Altruism has been defined by sociobiologists in the following way: "When a person (or animal) increases the fitness of another at the expense of his own fitness, he can be said to have performed an act of altruism" (Wilson, 1975:117). This brought up the rather sticky dilemma of explaining how a behavior which by definition reduces personal fitness could possibly evolve by natural selection. After observing many instances of animal behavior which appeared to be altruistic, thus reducing an individual's likelihood of reproductive success, scientists were perplexed about how the quality of altruism could ever be selected for in any given species. In the early sixties Wynne-Edwards (1962) published his now discounted *good of the species* or group selection argument. The essence of his argument, which is not central to this essay, was that individual animals exercised reproductive restraint to protect the species from disastrous population crashes which would follow unrestrained growth and the exhaustion of resources.

In refuting Wynne-Edwards's thesis and finding alternative explanations for altruistic behavior, certain changes were made in the underlying logic of evolutionary theory. First, in refuting the notion of reproductive *restraint*, evolutionists (and with increasing emphasis sociobiologists) argued that the principal effect of natural selection must be the *maximization* of reproduction. While this can take many different appearances not always coincident, to the outside observer, with a mad scramble to reproduce, it is the ultimate goal. Thus, selection was transformed from a minimum principle, becoming positive when any relative advantage in breeding is produced, to a maximizing one.

This preoccupation with maximization can be readily documented in the writings of a variety of sociobiologists. Williams (1966:132) writes, "[T]he reproduction of every individual is designed to maximize the number of its successful offspring." In speaking of maximum net returns, Trivers (1972:139) states:

For a given reproductive season one can define the total parental investment of an indi-

² The noticeable similarity in structure between species which performed similar functions also served as an impetus for the development of evolutionary theory.

vidual as the sum of its investments in each of its offspring produced during that season, and one assumes that natural selection has favored the parental investment that leads to maximum net reproductive success.

Similarly, according to Alexander (1975:90), "all organisms are assumed to be evolving continually to maximize their own inclusive fitness."

The second change in the Darwinian concept of evolution that occurred as a response to the group selection argument was an alteration in the meaning of fitness. Sociobiologists expanded the concept to mean more than just a reproductive advantage; species-typical behavior came to be defined as fit behavior³ (Alexander, 1975; Wilson, 1975:67). Fit behaviors are selected for, while nonfit behaviors are selected against. Thus, if a given behavior is exhibited by a species and typical of that species, it must be fit. There is an obvious tautology to this argument that was not present in the original concept of fitness. Wilson himself warns against the danger of tautological reasoning in his discussion of the Fallacy of Affirming the Consequent. He states:

In scientific practice the fallacy takes the form of constructing a particular model from a set of postulates, obtaining a result, noting that approximately the predicted result does exist in nature, and concluding thereby that the postulates are true. The difficulty is that a second set of postulates, inspiring a different model, can often lead to the same result. (Wilson, 1975:29)

In spite of the fact that Wilson is aware of the potential problem in sociobiological reasoning, this circularity becomes inevitable, particularly when applied to human social behavior. An example of this inevitability will be documented in detail later.

The third transformation in evolutionary theory occurred in regard to the concept of adaptiveness, which is conceptually linked to fitness. Sociobiologists who are concerned with the adaptive significance of animal behavior define an adaptation as "any evolved characteristic of an organism that increases its fitness"

(Barash, 1977:33). Thus, any trait which increases the fitness of an organism is adaptive. In and of itself, this is not problematic, but sociobiologists assume that behavior patterns *are* adaptive (Barash, 1977:33). If they exist, it is because they have conferred some selective advantage, thus increasing the adaptive fitness of the organism. This is basically another way of saying that species typical behaviors are fit behaviors, because they are present. This argument contains the same tautological reasoning.

Aside from the tautological reasoning introduced into the process of evolution, this concern with adaptive fitness has led sociobiologists to conceptually exclude other mechanisms that lead to evolutionary change. Most evolutionary theorists have come to recognize that evolutionary change is not a simple matter of selection but a complex combination of mechanisms including migration between gene pools, recombination and genetic drift. No single mechanism accounts for all evolutionary change, although natural selection is regarded as the most general determinant. In other words, natural selection as a response to changes in environmental conditions is one aspect in a series of factors which influence evolutionary change, and many differences between groups can be attributed to *nonadaptive* differentiation (Dobzhansky, 1937; Dobzhansky and Pavlovsky, 1967; Lewontin, 1974; Wright, 1967).

There is no doubt that sociobiologists, who are after all serious scientists, are aware of other mechanisms of evolutionary change. Wilson devotes a portion of one chapter to an explanation of other evolutionary forces such as genetic drift, mutation and recombination, yet he and others choose to conceptually ignore the possible effects of nonadaptive differentiation (Wilson, 1975:65; Barash, 1977:33). As Barash (1977:33) emphasizes:

A fundamental assumption of sociobiology is that behavior patterns are in fact adaptive. Indeed, this is the basis for our present concern with natural selection and evolutionary process. However, some debate currently exists among evolutionary biologists as to the extent of adaptive versus nonadaptive

³ Actually sociobiology extended a trend that had begun with earlier additions to evolutionary theory.

(random) factors in evolutionary change. Most opinion favors the former, and this book will be concerned with behavior as an evolved adaptation of living things.

The issue is not so much what proportion of evolution can be explained by adaptive as opposed to nonadaptive factors, but rather how this singular emphasis has transformed the evolutionary paradigm. The concern with the maximization of adaptive fitness which is then used to explain presently existing behaviors distorts both evolution and the actual state of affairs in the real world. Sociobiologists tend to describe things as if they were one hundred percent adaptive, having maximized their reproductive fitness because they exist (Daly and Wilson, 1978; Trivers, 1972:139). Even though they are aware that evolution need not produce maximal solutions, they tend to forget or simply ignore the fact that this is the case. In reality the evolutionary process can only be defined and comprehended relative to a given set of environmental and demographic circumstances. Factors such as nutrition, toxins, accidents and learning experiences introduce phenotypic variance that is beyond the control of the genotype, often reducing the adaptiveness of the organism. Thus, maximization can never really occur and even if it did, it would be impossible to identify it. Conversely, making the assumption that behaviors which presently exist represent the maximal adaptiveness of the organism makes it impossible to find behaviors which are not maximally adapted; by definition they cannot exist.

This may appear to be an oversimplification of the underlying logic of sociobiological theory. In a sense, it is, since there are valid studies applying sociobiological concepts to some simple forms of nonhuman behavior. However, the methodology of sociobiology in the study of simple, nonhuman behaviors does not require the same kind of logical leap to relate theory to empirical fact that it does in understanding complex human behavior. In order to explain this more fully, it is first necessary to recall that the main method of evolutionary theory when

applied to forms is an historical approach⁴ (Lewontin, 1968; Sahlin, 1977). As history it is made up of existential statements rather than universal ones that are falsifiable according to Popper's criterion. As Lewontin (1968:207) explains:

The evidence that evolution has in fact occurred is contained in the succession of fossils found in different geological strata. From the fossil record we can state with confidence that there are many kinds of animals and plants that, having once existed, no longer exist. But that statement itself, far from being a universal statement, is an existential one; in fact it is a historical statement, exactly corresponding to the assertion that Napoleon once lived or that Martin Luther died on February 18, 1546, at Eisleben.

This interpretation of history, as the reconstruction of archeological remains, is a narrow one, admittedly excluding socially constructed meanings. As such it provides a reasonable perspective for providing an explanation, not in the sense of predictive power, but "understanding" as an account of remains.

Obviously when analyzing the history of behavior, there are no fossil remnants to provide clues around which to reconstruct historical movement. Instead history must be reinterpreted to signify comparisons between closely related species in order to identify phylogenetic sequences (Barash, 1977:53; Wilson, 1975:550). Even in analyzing simple, nonhuman behaviors, this method has a major weakness. As Barash (1977:53) admits, "In most cases, the proposed phylogenetic sequences seem eminently reasonable, but in the absence of fossil behavior patterns there is no definite way to refute or verify the assumption of which behavior came first." If verification is a problem in the analysis of the ultimate causality of simple, nonhuman behavior patterns, then consider the consequences in attempting to use the same method for complex human behaviors. Humans would have to be compared with other

⁴ There are other methods proposed by sociobiologists, including evaluative, correlational and predictive. Similar flaws can be demonstrated in these methods but for the sake of brevity, this task will not be undertaken in this paper.

primate species. However, other primate species do not have culture, so the comparison at best could only deal with very basic behavioral traits. Further, as Wilson admits, this method cannot be applied with confidence in humans. In addition the same problem of verification holds true, as it does for all sociobiology.⁵

Applying the Theory of Sociobiology

To prove that this description of the method and logic of sociobiology is not unjustly derived, let us examine a specific example of the application of the theory. As stated above, the impetus for sociobiology grew out of the debate regarding the origins of altruism. As might be expected, sociobiologists devised an alternative to the group selection argument (in fact two alternatives) based on the logic of maximizing reproductive fitness. These solutions were termed *kin selection* and *reciprocal altruism*. Both purport to solve the question of how the quality of altruism, which by all appearances reduces fitness, could arise through the process of natural selection where the goal is to maximize fitness.

In reanalyzing the group selection argument, Hamilton (1964) introduced the concept of kin selection. Kin selection is based on the genetic probability of relatives sharing the same genes. Since an individual shares half its genes with both its parents and its siblings, any altruistic act that increases the average genetic fitness of the members of the kin network as a whole, even at the expense of the individual, may enhance the ultimate reproductive success of the genes (Wilson, 1975:177). Thus, according to Hamilton (1964), the assessment of the fitness of a gene (or behavior) must take into account more than the reproductive consequences for the individual organism. What must also be considered is whether the reproductive prospects of any kin are in any way altered. Fitness in this expanded ver-

sion, termed inclusive fitness, refers to "a sum of the consequences for one's own reproduction, plus the consequences for the reproduction of kin multiplied by the degree of relatedness of those kin" (Daly and Wilson, 1978:30). Thus, the sacrifice of one's life for the benefit of two siblings ultimately would confer the same genetic benefit as staying alive and sacrificing one's siblings in terms of reproductive success.

The problem with explaining altruism in terms of kin selection is that altruistic acts do not always occur in the presence of kin; sometimes they are directed toward nonrelatives or strangers. Trivers (1971) solved this dilemma by adding the concept of reciprocal altruism to the now expanding model of sociobiological theory. The concept of reciprocal altruism can best be understood by summarizing Trivers's example. According to Trivers (1971), if you were to save a drowning man who would have a fifty percent chance of dying without your help at a small risk to your own mortality (say five percent), and if at some future time he were to save you from a similar plight where the chances of living and dying were reversed, then you both would have increased your long-range survival chances by forty percent.⁶

There are several problems with these two solutions to the dilemma of altruism, some obvious and others not so obvious. Most critical is that the two theories combined provide a perfect example of the Fallacy of Affirming the Consequent. Both altruistic action that confers no relative advantage to the altruist and action that does may be considered equally adaptive. If an individual is good to his kinsmen, it benefits his own inclusive fitness; if he aids a stranger he benefits in the form of reciprocal altruism. Thus, the phenomena of altruism can be accounted for by two contradictory hypotheses (Sahlins, 1977:84). Any act of altruism can be construed as beneficial to the indi-

⁵ There are some excellent examples of the analysis of the biological origins of behavior, but they do not attempt to identify the underlying evolutionary significance. For example, see Mazur, 1973.

⁶ Sahlins (1977:85) wryly notes that the example of the drowning man is an unfortunate choice "because after all it would be evolutionarily short-sighted to save a man who can't swim on the supposition that he will later rescue you from drowning. . . ."

vidual, either directly by protecting one's genes or indirectly by helping a stranger who might later reciprocate. There are almost no acts of altruism that cannot be explained as adaptive.

The theory of kin selection has a genetic basis that is theoretically calculable, although Wilson (1975:120) admits that "Hamilton's mode of reasoning can be only loosely coupled with the remainder of genetic theory, and the number of predictions it can make is unnecessarily limited." The theory of reciprocal altruism has no genetic basis that can be calculated, and there seem to be no examples of animal behavior that conform to the theory (Wilson, 1975:120). Since the examples of reciprocal altruism consistent with genetic theory only come from human behavior, it seems more logical to suppose that in actuality, there is no genetic basis at all; it is entirely social. Further, if it is true as Wilson notes that there are no animal examples of reciprocal altruism, then how can any of the methods of sociobiology be applied? The only possible way to test the genetic basis of the behavior would be to trace it phylogenetically. However, in contrast to other less complex human social behaviors that may be traceable, reciprocal altruism is not.

Evolutionary Principles in Sociobiology

The view of change implied in sociobiological thought is similar to that in Darwin, random but persistent rather than cataclysmic. The cause of change in both is natural selection acting on variations in individuals. Sociobiologists, along with all modern evolutionary theorists, have been able to hone evolutionary theory to a highly sophisticated degree. In contrast, Darwin who was unaware of Mendel and genetics, was perplexed by the etiology of variation. This was a problem which plagued Darwin throughout his life, as he wrote at one time to Huxley, "You have most cleverly hit on one point, which has greatly troubled me; if, as I must think, external conditions produce little direct effect, what the devil determines each particular variation?" (Darwin 1888:232). So sociobiologists having the advantage of a

knowledge of modern genetic theory are able to produce a more sophisticated view of change than Darwin, including an awareness of the source of variation between individuals.

In contrast to Darwin where order was merely a taxonomic scheme for categorizing empirical instances, sociobiologists view regular change as leading to an increasingly adaptive order, one of behavior in addition to form. Transforming the central issue from one of form to one of behavior appears to be a logically and biologically sound transition. Many studies have identified behaviors where the genetic basis can be calculated. From there it is a simple matter to extend the analogy; if simple behaviors can be identified as structured by the genetic code, then why not complex social behaviors, such as altruism, deceit, aggression, parent-child conflict, even marital infidelity. All can be "explained" by the insistent force of natural selection. However, if the idea of order is preconceived as one that is necessarily adaptive, then existing behaviors can only be explained by their selective advantage. For behaviors to be viewed as nonadaptive or perhaps social in nature, the preconception of adaptiveness must be altered.

In sociobiology the principle of direction has been expanded beyond its original meaning. Darwin recognized that forms could be classified on the basis of complexity. Similarly, sociobiologists can classify behaviors on this same basis. What differs in sociobiology is the assumption that change will nearly always be directed toward maximizing reproductive fitness, that organisms will always be progressing toward the optimum phenotype (Wilson, 1975:24,156). In this sense, the principle of progress has been subtly incorporated with a meaning quite different from that defined earlier. When initially defined by Lewontin, progress was differentiated from direction by the presence of a moral tone. In sociobiological theory, the moral tone has been transformed from the morality of human consciousness to the morality of the gene. In describing the ethical philosophy that characterizes the essence of sociobiology, Wilson (1975:4) states:

Love joins hate; aggression, fear; expansiveness, withdrawal; and so on; in blends designed not to promote the happiness and survival of the individual, but to favor the maximum transmission of the controlling genes.

Thus, the source of morality lies in the struggle of genes to replicate themselves.

CONCLUSION

In his introduction, Wilson (1975:4) criticizes sociology because of its nongenetic approach which proceeds by "unaided intuition, without reference to evolutionary explanations in the true genetic sense." He then modestly continues, "It may not be too much to say that sociology and the other social sciences, as well as the humanities, are the last branches of biology waiting to be included in the Modern Synthesis." Given the fact that there is *no* demonstrable method for identifying the evolutionary significance of human social behavior, it seems highly unlikely that the social sciences and humanities are in imminent danger of losing their independent identities. The method of sociobiology is remarkably tautological, as demonstrated in the discussion of kin selection and reciprocal altruism. Explaining parent-offspring conflict over such matters as going to bed early, studying hard in school, not fighting with siblings, and refraining from gambling, drinking and premarital sex in terms of the ultimate evolutionary significance is intellectual gamesmanship. According to sociobiology, the purpose of socialization is based on the desire of parents to either prepare their children for future genetic altruism or reduce their own time and/or energy expenditure. Children disagree with these parental prescriptions; they generally consider them a drag, because of "their adaptive unconscious perception that such actions would maximize their parents' fitness rather than their own" (Barash, 1977:307). Trivers's (1974) offering of genetic theory as a replacement for what is presently known about childhood socialization does not appear to be immediately threatening to the social sciences, at least as presently formulated.

Sociobiologists have altered the paradigm of evolutionary theory by changing the underlying logic. The concept of differential reproduction has been raised to the highest level of efficiency. Both direction and progress which existed to a minimal degree in Darwin have been added to the model by the emphasis on the maximization of adaptive fitness expressed as an expanded economic metaphor. However, there is no evidence that human behavior represents maximized fitness, nor does it appear to be progressing in that direction. Sociobiology is based on a preconceived notion of change leading to a necessarily adaptive order in which progress is economically calculated in terms of gene survival. Thus, it must be concluded that in terms of method and logic, sociobiology is not applicable to the study of human social behavior.

REFERENCES

- Alexander, Richard O.
1975 "The search for a general theory of behavior." *Behavioral Science* 20:77-100.
- Barash, David P.
1977 *Sociobiology and Behavior*. New York: Elsevier.
- Barlow, N. (ed.)
1958 *The Autobiography of Charles Darwin*. London: Collins.
- Couch, Carl J.
1978 "Paradigms of thought." Paper presented to the Society for the Study of Symbolic Interaction. Columbia, South Carolina.
- Daly, Martin and Margo Wilson
1978 *Sex, Evolution and Behavior*. North Scituate: Duxbury.
- Darwin, Charles
1859 *On the Origin of Species by Means of Natural Selection*. London: Murray.
1888 *The Life and Letters of Charles Darwin*. London: Murray.
- Dobzhansky, Theodosius G.
[1937] *Genetics and the Origin of Species*. New York: Columbia University Press.
- Dobzhansky, Theodosius and Olga Pavlovsky
1967 "An experimental study of interaction between genetic drift and natural selection." Pp. 249-59 in G. E. Brousseau, Jr. (ed.), *Evolution*. Dubuque: Brown.
- Freeman, Derek
1974 "The evolutionary theories of Charles Darwin and Herbert Spencer." *Current Anthropology* 15:211-37.
- Hamilton, W. D.
1964 "The evolution of social behavior." *Journal of Theoretical Biology* 7:1-52.

- Kuhn, Thomas S.
1970 *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lewontin, R. C.
1968 "The concept of evolution." Pp. 202-10 in D. L. Siles (ed.), *International Encyclopedia of Social Sciences*, Vol. 5. New York: Macmillan.
1974 *The Genetic Basis of Evolutionary Change*. New York: Columbia University Press.
- Mazur, Allan
1973 "Cross-species comparison of status in established small groups." *American Sociological Review* 38:513-30.
- Merchant, James (ed.)
1916 *Alfred Russell Wallace: Letters and Reminiscences*. London: Cassell.
- Sahlins, Marshall
1977 *The Use and Abuse of Biology*. Ann Arbor: University of Michigan Press.
- Simpson, G. G.
1974 "Reply to Freeman." *Current Anthropology* 15:228-9.
- Spencer, Herbert
1864 *The Principles of Biology*. London: Williams and Norgate.
- Trivers, Robert L.
1971 "The evolution of reciprocal altruism." *Quarterly Review of Biology* 46:35-57.
1972 "Parental investment and sexual selection." Pp. 136-79 in B. Campbell (ed.), *Sexual Selection and the Descent of Man, 1871-1971*. Chicago: Aldine.
1974 "Parent-offspring conflict." *American Zoologist* 14:249-64.
- Williams, G. C.
1966 *Adaptation and Natural Selection: A Critique of Some Current Evolutionary Thought*. Princeton: Princeton University Press.
- Wilson, Edward O.
1975 *Sociobiology: The New Synthesis*. Cambridge, Ma.: Belknap.
- Wright, Sewall
1967 "The roles of mutation, inbreeding, crossbreeding and selection in evolution." Pp. 68-78 in G. E. Brousseau, Jr. (ed.), *Evolution*. Dubuque: Brown.
- Wynne-Edwards, V. C.
1962 *Animal Dispersion in Relation to Social Behavior*. Edinburgh: Oliver and Boyd.

SIZE AND ADMINISTRATIVE INTENSITY IN NATIONS*

PATRICK D. NOLAN

Pennsylvania State University at Schuylkill Haven

American Sociological Review 1979, Vol. 44 (February):110-125

This paper reports the results of a cross-national study of the relationship between system size and administrative intensity in societies. Predictions that the relative size of government will increase with increases in system size derived from Mayhew and Levinger's (1976a) *density of interaction* model and consistent with an elaboration of Blau's (1970; 1972) *economy of scale* theory of administration are tested with data on 70 nations varying in size, population concentration, and general technological development. A nonmonotonic U-shaped relationship is found between population size and the relative size of government, and this relationship continues to be evidenced when general technological development is controlled. But despite the robustness of the nonmonotonic relationship of administrative intensity with system size, measures of urbanization and relative population concentration are shown to be highly and monotonically related to the relative size of the administrative component of nations. Differences between the two analyses and other problems are discussed, but, with minor qualification, results of these two analyses are interpreted as providing support for the Mayhew-Levinger (1976a) and elaborated Blau (1970; 1972) models and predictions.

The problem of determining the effects of increasing system size on the administrative structure of systems continues to be of interest to sociologists and students of organization. This is evidenced by the publication of two studies which arrive at contradictory conclusions concerning the effects of population size on administrative intensity in social systems (Kasarda [1974a] and Noell [1974a]) as well as by Kimberly's (1976) recent attempt to discern underlying continuities in a diverse and sometimes contradictory literature on formal organizations. Kasarda and Noell, in part, reflect an ongoing debate in the organizational literature (cf. Blau and Schoenherr, 1971:83-90; and Thompson 1967:74); however, their studies also indicate a line of development on this ques-

tion. Both are concerned with the possible extension of size-administrative component generalizations from formal organizations to more diffusely organized systems: communities and societies. Unfortunately, the results of their studies are directly contradictory. Noell maintains that his data clearly demonstrate that such an extension is *warranted*; and Kasarda just as clearly states that such an extension is *unwarranted*. Before a third voice is added to this discussion, it is necessary to examine their respective studies in more detail.

Kasarda (1974a) argued, on the basis of the cross-sectional occupational distributions of 43 nonagricultural nations, that social systems experience an increasing administrative ratio with increasing system size. This clearly challenges the simple extension of economy of scale theories to social systems.¹ In fact, Kasarda's

* Address all communications to: Patrick D. Nolan; Department of Sociology; Pennsylvania State University; Schuylkill Haven, PA 17972.

This is a revised and expanded version of a paper presented at the annual meeting of the American Sociological Association, San Francisco, 1978. The author would like to thank Peter Blau, Eugene Ericksen, John Kasarda, Roy Kass, Dean MacCannell, Dave Martin, Bruce Mayhew, Diane Levy-Miller, Robert K. Miller, Elaine Nolan and several anonymous reviewers for their helpful comments on earlier drafts of this paper and to absolve them of any responsibility for his use of their advice. Thanks are also due to Lindsay Berger and Ruth Squyres for their typing assistance.

¹ In this context, an *economy of scale* is simply a savings in personnel that is engendered by growing organization size. Since there is some irreducible *minimum* of administrative personnel necessary for the functioning of an organization, it is often the case that an increase in organization size does not require a corresponding increase in administrative personnel, and, in fact, may provide for more efficient use of existing personnel. Therefore, a smaller proportion of the organization would be employed in administrative positions. The same reduction in the proportionate size of administration would result if

three-level analysis indicates that some of the reduction in administrative personnel found in formal organizations may be illusory, since declines in management are mitigated by offsetting increases in communications personnel required to coordinate activities in larger systems. This argument has gained considerable theoretical support from Mayhew and Levinger's (1976a) paper which posits that the expected level of interaction in a system is a multiplicative, rather than an additive, function of system size.² From this theoretical perspective, the increasing problems of coordination engendered by a multiplicatively increasing density of interaction might explain the disproportionate growth in administration found in some large formal organizations and social systems.

Noell's (1974a) study of the 50 state governments in the United States directly contradicts Kasarda's findings. Noell's data indicate that the proportion employed in state governments *declines* with increasing system size. He thus concludes that theories of an economy of scale are applicable across system levels. These two contradictory conclusions in themselves indicate that the issue warrants further study, but there are methodological limitations which also should be considered. Kasarda studied the problem cross-nationally but he employed an *indirect* indicator of the size of the administrative subsystem (i.e., the proportion of the labor force employed in administrative positions). Noell used a more direct indicator of the size of the administrative subsystem (i.e., the proportion employed in government) but he limited his study to one country, the United States, which cannot be considered typical or representative of national organizations, and, therefore, may not give an accurate depiction of the general relationship between

the two variables.³ This paper will combine what are felt to be the respective strengths of these two studies. It will use government employment as its indicator of the size of the administrative component of societies, and it will examine the relationship cross-nationally in 70 nations which vary in size, technological development, and population concentration.

As suggested by Mayhew and Levinger (1976a), the expectation is that increasing interaction will increase problems of coordination and control and since governments are the *subsystems specifically charged with monitoring and responding to system-spanning problems*, they can be expected to expand in size to meet these growing contingencies at the national and regional level. Since the rate of interaction and its attendant problems are predicted to be increasing at a faster rate than the population is growing, government is expected to grow at a faster rate than population. Therefore, as the size of the system increases government employment should begin to constitute a greater proportion of the population or work force. Growth in government, however, is not the only way that a government can increase its capacity to coordinate. We are not maintaining, therefore, that growth in employment is the only way that governments can be expected to respond to increasing problems of administration, but rather that it is a reasonable place to look for a society's response to an increase in problems of administration.

At first glance such a prediction appears to contradict the extension economy of scale theories to social systems, but further examination of one economy of scale theory suggests this need not be the case. Blau's (1970; 1972) discussion of the indirect effects of size on administration contends that economies of scale are, in some measure, offset by the increasing complexity that size introduces into the system via differentiation (this is also at the heart of Kasarda's [1974a] argument regarding increased communication needs in complex systems). Blau maintains,

administrative personnel grew at a slower rate than overall organization population. In such cases, the administrative component would increase in *absolute* numbers while declining as a proportion of the total population of the organization.

² Kasarda's (1974a) hypotheses originally were derived from theories of nonproportional growth put forth by Thompson (1917) and by Boulding (1953).

³ Noell (1974a:555) is aware of some of the limitations on the generalizability of his findings to other independent and federal systems.

therefore, that while initial increases in size and differentiation produce substantial decreases in administrative ratios, further increases in size are accompanied by ever smaller declines in administration, presumably because increasing complexity introduces increasing problems of coordination and communication. In Blau's data on formal organizations, these indirect effects never fully counteract the direct effects which reduce administration, although they do, he argues, begin to attenuate the slope of the curve. It is important to keep in mind that the upper size limit of the organizations that Blau examined was well below that of even the smallest nation. It is thus conceivable and consistent with Blau's theory to posit that *in larger systems the indirect effect of size might begin to outweigh the direct effect, and a reversal of the trend of declining administration would evidence itself*. Blau (1974:16, emphasis added), in fact, alludes to this possibility:

Within organizations, structural differentiation, by enhancing problems of coordination and communication, enlarges the administrative component. The same may well be true for entire societies. Specifically, the increasing differentiation of societies may *expand the proportion of civil servants* and of their labor force in other administrative positions.

Thus Blau's theory, rather than being discredited by such a finding at the societal level would, in fact, be elaborated empirically by demonstrating the effects of size over a greater range of the variables.⁴ Also, considering the problem in

this light makes it clear that even the demonstration of a decline in the *rate* at which administrative ratio decreases with increases in the size of social systems provides plausible, if not compelling, evidence for our proposition. Stronger evidence, of course, would be provided if it could be demonstrated that administrative ratio increases in larger systems, for this would indicate that the decline in administration had not only been attenuated, but in fact had been arrested and reversed.

Given the considerable evidence in support of economy of scale theories found in organization research, it makes sense to test this density of interaction hypothesis against them. Orienting ourselves to economy of scale theories establishes an explicit *gradient* of support for the hypothesis, and this allows consistent inferences to be drawn from the data.⁵

DATA AND METHODS

For purposes of the present analysis, system size is operationalized by population, since this is the most basic indicator of the system's conduciveness as well as its limitations on interaction density according to the Mayhew-Levinger model

labor in the form of structural differentiation, *not* the distribution of individuals in general occupational categories. Of concern would be the number of occupational categories or organizations, not the distribution of individuals in them.

In any event, when the effects of size on the administrative component are examined, one can assume that this increase in size produces an increasing division of labor. The division of labor, therefore, can be seen as an unmeasured intervening variable.

⁵ For instance,

- strong support: proportion in administration is *positively* and highly correlated with size;
- moderate support: proportion in administration is *positively*, but not highly, correlated with size;
- qualified support: proportion in administration is *not negatively* correlated with size.

Of course provisions could be made for changes in the direction or sign of the relationship over the range of size—certainly a shift from negative to positive as size increases is in line with the theory, whereas a shift from zero or positive to negative would not be. (Zero values would be interpreted in the context in which they might appear in the analysis—as in the cases of specification.)

⁴ Given the strong empirical and theoretical connection between size and the division of labor (e.g., Mayhew et al., 1972; Durkheim, 1964; Blau and Schoenherr, 1971), there is no incompatibility between the density of interaction hypothesis discussed here, and theories that see the division of labor as generating problems which require a greater development of mechanisms of coordination and integration to maintain system integrity. In fact, moving to this level of analysis (which is more sociological), one could generate an expectation for the density of interaction between *structural units* rather than individuals. The density of interaction hypothesis should apply at this level (i.e., interaction between units should increase at a multiplicative rate), and it is conceivable that the hypothesis would have more explanatory power at this level. To do so, however, would require a measure of the *division of*

(1976a). And, although there has been some disagreement as to whether government employment or the percent of the labor force employed in administrative positions provides the more accurate assessment of administration at the societal level (Noell, 1974b; Kasarda 1974b), it is arguable that the level of government employment is at least one reasonable place to look for a society's response to problems of regulation and coordination posed by increasing levels of interaction and system activity.

In gathering government employment data as an index of the size administrative component of the nation, the intent was to get the most accurate measure of total civilian government employment (salary and wage workers) including local, regional, and central government where reported separately.⁶ Rupprecht (1974) provides the most comprehensive argument as to why total government employment is the best cross-national indicator of the size of government. He argues that it is superior to revenue and taxation measures in indicating size, and that it is clearly the most comparable measure available cross culturally. This is not to say, however that the measure is without

limitations and problems. Kasarda (1974b) has raised objections and has indicated the heterogeneity of government employment in somewhat the same manner that Rushing (1966) pointed out the heterogeneity in the administrative component of formal organizations. There are undoubtedly other sources of error and slippage in this indicator due to its generation from secondary sources (Webb et al., 1966), but multiple sources were sought, and discrepancies between sources were investigated in order to get the most accurate assessment. The date for the government figure was used then to determine the relevant date of the independent variables. In some cases it was necessary to adjust figures by determining the number of noncivilian personnel and subtracting them from government in order to make measures more comparable cross nationally.

In contrast to Kasarda (1974b), Noell (1974b) argues for the use of government employment as the best indicator of administration at the societal level, and although the relative utilities of these measures cannot be resolved here (each would seem to have its advantages and disadvantages), use of government as an indicator of the size of administration in a cross-national context will allow us to determine if the discrepancy between Noell (1974a) and Kasarda (1974a) is due merely to their respective choice of indicators. In all, cross-sectional data on government employment were obtained from secondary sources for 70 nations.⁷ Of particular use

⁶ In order to avoid confusion, it should be clearly understood that when we are dealing with the size of government, we are dealing with what might be termed the implementation structure, we are making no statements about decision making in these systems. The number of persons that are involved in making decisions or in setting policy is clearly independent of the number of persons needed to administer or implement those decisions and policies.

A growing government sector may become increasingly unwieldy, but no one would argue that a system is more democratic simply because more people are required to run it. This also posits that no contradiction exists between the predictions made here of an increasing proportion employed in government and Mayhew (1973) and Mayhew and Levinger's (1973; 1976b) theoretical argument for a declining proportion in the "ruling elite." The two are analytically separable questions. What is argued here is that increased coordination problems will put pressure on the system to expand its administrative capacity by increasing employment—it does not imply that more persons will thereby be involved in making decisions and setting policy. It is conceivable that a growing government sector could be implementing policies that are set by a proportionately declining "elite." Failure to separate these two questions can only result in unproductive debate and confusion.

⁷ Although this analysis relies on cross-sectional data, examination of over-time data has shown that in the United States government employment has increased at a faster rate than population at both the federal and the local level (Lenski and Lenski, 1974: 359–60; Fabricant, 1949; 1952). Labor force statistics for Canada and Great Britain indicate that this same disproportionate growth in government has taken place in these countries as well.

In Canada the percent of total population employed by government has increased from .27 in 1912 (earliest total figure) to 1.0 in 1959. In Great Britain employment in "Public Administration" expressed as a percent of the population of England and Wales has increased from .27 in 1840 to 1.2 in 1921 (when the classification system was changed).

Thus, on the basis of readily available over-time data, one would conclude that government has grown at a faster rate than population in the United

in generating these data were the *Worldmark Encyclopedia of Nations*, *The Statesman's Yearbook*, the *Europa Yearbook*, and Rupprecht (1974). In addition to these compilations, the statistical yearbooks of the various nations that were held by the Temple University Library, University of Pennsylvania Library, the Library of Congress, and the Department of Labor were directly consulted (where language and assistance permitted) in the collection of government data. The 70 nations for which data were available comprise roughly half of the independent and quasi-independent nations in the world (136) as determined by the U.S. Department of State in 1969.⁸ The only known bias in the data set is the exclusion of most communist or socialist nations. This is a result of the fact that most socialist nations do not report a government employment figure that is sufficiently distinct from industrial employment. Lack of probability sampling and the exclusion of socialist nations does not necessarily affect the validity of this study but it does limit the generalizability of the findings.

Since it is the relative rather than the absolute size of government that is of interest, this figure is expressed as a percent or proportion of the total population.

States, Canada, and Great Britain. The fact that such diachronic data are limited to western, industrialized nations of considerable size, makes it important to examine the question cross-nationally, in different types of nations, even if that examination is synchronic. This is necessary to avoid inferring a "universal" process from a limited and perhaps culturally biased sample of nations. Sources: Mitchell, 1965; Urquhart, 1962.

⁸ The data set consists of: Argentina, Australia, Bahrain, Barbados, Belgium, Bolivia, Botswana, Burma, Burundi, Cambodia, Cameroon, Canada, Central African Republic, Chile, Columbia, Cyprus, Dahomey, Ecuador, Ethiopia, Finland, France, Gambia, West Germany, Ghana, India, Iraq, Ireland, Israel, Italy, Ivory Coast, Japan, Kenya, South Korea, Kuwait, Madagascar, Malaysian Federation, Malawi, Malta, Mauritania, Mexico, Morocco, Netherlands, New Zealand, Norway, Paraguay, Peru, Puerto Rico, Southern Rhodesia, Romania, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Republic of South Africa, Swaziland, Sweden, Syria, Tanzania, Togo, Trinidad and Tobago, Uganda, Upper Volta, United Kingdom, United States, Venezuela, Western Samoa, Southern Yemen, Yugoslavia, Zambia.

Further information on the data set is available in Nolan (1978) and from the author on request.

This measure is analogous to the administrative ratio that has been used as an index of administrative intensity in formal organization research. And despite their long history in the study of organizations and macrostructures, ratio variables and the administrative ratio in particular have become the subject of some controversy in methodological and statistical circles (Freeman and Kronenfeld, 1973; Fuguitt and Lieberman, 1974; and Schuessler, 1974). This controversy, therefore, needs to be considered before proceeding to the analyses of our data. It is interesting that the issue is considered to be a statistical one, given that both Fuguitt and Lieberman (1974:132-3) and Schuessler (1974:394-5) point out that the determination of whether to use ratio variables or the administrative ratio in a given research context is determined by *theoretical* and *conceptual* concerns, rather than statistical or technical concerns. This is clearly evident in Fuguitt and Lieberman's (1974) discussion of the issue of "spurious correlation," as originally raised by Pearson (1897), where they state:

A number have pointed out that there is nothing intrinsically spurious about the correlation, though interpretations may indeed be spurious, *as in inferring from a ratio correlation the size or direction of a component correlation or vice versa. A basic distinction here is whether one's major interest really focuses on the component measures.* (Fuguitt and Lieberman, 1974:132, emphasis added)

They argue that if in fact one's concern is with the ratio itself and not its components, then the presence of a common term is not problematic. It is the *theoretical concern* and the *substantive* focus that determines if ratio variables are appropriate, not technical statistical concerns (Schuessler, 1974:395). In reiterating this contention in their conclusion, Fuguitt and Lieberman (1974:141, emphasis added) add on a "belief" and a suggestion:

First, an argument can be made that spurious correlation is not an issue in correlating ratio or difference terms, provided that one's interest is exclusively in the composite variables rather than in the components. *We believe*, however, that it is usually difficult to maintain that position; problems *can* be reformulated in terms of component variables,

or in any event the relation between the components and the composite variables *may be profitably explored*.

Fuguitt and Lieberman's "belief" would appear to be the belief that sociologists cannot be genuinely interested in the study of social structures and the use of structural variables, and does not detract from the fact that they have themselves argued that the problem is a theoretical and conceptual issue rather than a simple technical or statistical one. The determination of the use of a ratio must stand or fall on the basis of its theoretical justification.

Clearly the interest in administrative ratio expressed here is the use of it as an indicator of the relative size of the administrative component of the nation. It is to be used to determine the effects of system size (scale) on the administrative component, not the effects of increasing population on administrative employment. Although the distinction may be subtle, this is not merely hair-splitting. The focus is on administrative ratio as a *structural variable*, and it differs from the managerial concern with the effects of increasing production employment on overhead or nonproductive personnel. It is not used to enable the prediction of the number of government employees from the size of the population, but rather to see the effects of increasing population on the relative size of the administrative component of the nation. Since interest is in the composite rather than the components, use of administrative ratio would appear to meet Schuessler's as well as Fuguitt and Lieberman's criteria of acceptability. The fact that the hypothesis *can* be stated in other terms is another matter.

Other critics, notably Freeman and Kronenfeld (1973), have added to this controversy by claiming that correlations between size and administrative ratio are an "artifact" and can be produced by "random noise." This issue of "definitional dependency" or "built in" *negative* association between these variables has been seen to result from the assumptions these critics make rather than the intrinsic properties of the variables (Mayhew and Levinger, 1976b:1018; MacMillan, 1975;

Kasarda and Nolan, 1978), but since knowledge of this is not widespread, it is fortunate that these critics have proposed alternative methods which they claim are free of this problem. One of these methods which was proposed also by Akers and Campbell (1970) has been used to determine the relative growth rates of a variety of phenomena including: the organs of cats, size and functional differentiation in preindustrial and industrial societies, and even the relative growth rates of populations, legislatures, and governments (Svalastoga, 1974). Since this method is presumably free of the "problems" Freeman and Kronenfeld (1973) have discussed, and there is neither the time nor the space here to consider the issue more fully, this alternative method will be used to check the results of the analyses that employ administrative ratio (see fn. 13).

Two indicators of technological development also were gathered for use in the analysis: (1) the percent of the total population engaged in agriculture (United Nations, 1971: Table 5) and (2) the energy consumed per capita in kilograms coal equivalent (United Nations, 1973: Table 137). Employing these measures as controls will allow us to determine if size has an effect on administrative ratio that is independent of general technological development. Measures based on the areal expanse of the system also will be introduced as controls in this analysis. In addition, because we are sensitive to the fact that the relative concentration of a population is as important as the size of the population, we will examine the relationship between administrative intensity and two direct measures of population size and concentration (cf. Taylor and Hudson, 1972: Tables 4.1 and 4.2, respectively):

- (1) URBAN, the percent of the population residing in cities of 100,000 or more;
- (2) CONCENT, an index of the relative concentration of population over the area of the country varying from .000 to 1.0.

The use of these variables as indicators of structural properties provides the same

Table 1. Correlations of the Percent Employed in Government and Population Size All Nations (N = 70)

	CORRELATION SIGNIFICANCE	
PERCENT IN GOVERNMENT BY POPULATION	.09	.22
LOG PERCENT IN GOVERNMENT BY POPULATION	.13	.14
PERCENT IN GOVERNMENT BY LOG POPULATION	-.01	.47
LOG PERCENT IN GOVERNMENT BY LOG POPULATION	.03	.40

defense for these ratio variables that was given for the use of the administrative ratio itself.

ANALYSIS AND DISCUSSION

The zero-order product-moment correlations shown in Table 1 between population and the proportionate size of government offer little evidence of relationship. Certainly no strong *linear* relationship is present. The simple correlation between size and the percent employed in government is .09, and when the variables are logarithmically transformed to detect simple curvilinearity, the coefficients remain small, and in one case change signs. The lack of probability sampling prevents one from relying too heavily on significance figures in drawing conclusions.⁹ But since Pearson-correlation is only capable of measuring the degree of *linear* association, and logarithmic transformations will only detect certain forms of curvilinearity, examination of the scatterplot is always indicated before concluding that no relationship exists (Blalock, 1960:312). Examination of the scatterplots suggested that the relationship was not only curvilinear, but was also *nonmonotonic*. It appeared to be a rather flattened U-shaped curve with an inflection approximately at the medium of population size. In order to test this impression, the data were broken into four size categories and the mean percent in government was computed for each category.¹⁰ This distri-

bution of the means, shown in Table 2, confirms the impression gleaned from the scatterplots.

The lowest size category has the highest mean government employment. The second size category has the lowest mean government employment with the third and fourth category means displaying a progressive increase. Since the inflection of the curve falls approximately at the median, a further test of nonmonotonic relationship would be provided by performing separate analyses on the subpopulations when the data are split at the median (or approximate point of inflection). For convenience correlations calculated in these subpopulations are referred to as split correlations. The use of separate analyses for curvilinear relationships is suggested by Heise (1975:91-2). He states that curvilinearity of this type can be dealt with simply by performing two separate linear analyses, one for the lower values

the means were plotted, the same general pattern emerged indicating that the pattern is not merely an artifact of our choice of cut-points. If we use Kasarda's purposive categories (adapted to his data, not *ours*), we find some interesting differences in the data on developed nations.

Using Kasarda's categories:

Lowest to 500,000 = 1;
500,001 to 5,000,000 = 2;
5,000,001 to 25,000,000 = 3;
25,000,001 to Highest = 4.

The category means of all nations are:
3.262, 1.884, 1.899, 3.127
N=6 N=25 N=29 N=10.

Note the interesting differences between nonagricultural and industrial nations:

Industrial More than 2,000 kilos coal
(N=24)

1.910 3.069 3.500 3.867
N=2 N=9 N=7 N=6

Nonagricultural
(N=33)

4.252 3.455 3.051 3.429
N=3 N=10 N=13 N=7

The shifting of a few additional cases in this instance *does* affect the pattern of the relationship.

⁹ Since we are not dealing with a probability sample in this analysis, significance figures have no direct or simple interpretation. They are reported for the reader's interest and because it is customary to do so even where they are not really warranted (Noell, 1974a; Sjoberg and Nett, 1968:281-4).

¹⁰ We are sensitive to the fact that how one categorizes (i.e., the choice of cut-points) the data may influence the means. We used quartiles not because of any intrinsic property or a priori knowledge of the means, but rather because of the small number of cases. When the data were broken into deciles and

Table 2. Mean Percent Government Employment in Population Size Categories for all Nations Combined and for Nations Classified by General Technological Development

SIZE CATEGORY	MEAN PERCENT IN GOVERNMENT	N	MEAN PERCENT IN GOVERNMENT	N
ALL NATIONS				
140,000– 2,550,000	2.743	18		
2,550,001– 5,750,000	1.250	17		
5,750,001– 15,000,000	2.180	18		
15,000,001–504,000,000	2.539	17		
DEVELOPED NATIONS				
NONAGRICULTURAL NATIONS LESS THAN 50% IN AGRICULTURE			INDUSTRIAL NATIONS MORE THAN 2,000 KILOGRAMS COAL CONSUMED	
216,078– 2,780,000	4.996	8	4.018	6
2,780,001– 8,600,000	1.674	8	1.467	5
8,600,001– 22,500,000	3.285	9	3.500	7
22,500,001–204,800,000	3.505	8	3.867	6
NONDEVELOPED NATIONS				
AGRICULTURAL NATIONS MORE THAN 50% IN AGRICULTURE			NONINDUSTRIAL NATIONS LESS THAN 2,000 KILOGRAMS COAL CONSUMED	
140,000– 2,350,000	1.386	9	2.576	11
2,350,001– 5,200,000	.705	10	.705	10
5,200,001– 10,900,000	1.047	9	1.415	13
10,900,001–504,000,000	1.456	9	1.674	12

(of size), and another for larger values (of size). This procedure is adopted here in lieu of developing a curve to fit the overall relationship between population size and the percent employed by government.

The split correlations in Table 3 indicate that the direction of the relationship reverses at the median. At the lower end of the size scale a strong negative relationship is evidenced, while in larger systems the relationship is positive. The distribution of means and the correlations offer consistent evidence of a nonmonotonic relationship between size and the proportion employed in government. The form of this relationship suggests that a threshold effect may be operating. This would indicate that after some critical value of size is reached, the direction of the relationship reverses. Thus the question as to whether economies of scale do or do not obtain may have to be specified by size level. This is especially important for this analysis because one goal of this research is to test for possible isomorphism across system levels. If the specification continues to hold up in later analysis it may well be one of the most important findings, but before over-interpreting this ef-

fect, the relationship should be examined when technology is controlled.

Kasarda's (1974a:24) method of case selection suggests a possible use for our first measure of general technological development: nations in which less than half of the population is engaged in agriculture will be classified as developed, and those in which more than half are engaged in agriculture can be classified as undeveloped. This procedure results in 33 nations being classified as developed (nonagricultural) and 37 nations being classified as undeveloped (agricultural).

Table 2 shows that the same nonmonotonic pattern is present even though the mean level of employment in government is higher for nonagricultural nations than for all nations. The split correlations in Table 3 also are similar to those found in all nations. They are negative for small systems and positive for large systems. Nonagricultural nations thus exhibit the same pattern of relationship that was found in all 70 nations, and while the correlations are rather small at the upper end of the size scale, the pattern of relationship appears to be holding when technology is, in some measure, controlled. The

Table 3. Correlations of Population Size and the Percent Employed in Government for Small and Large Nations When Classified by Agricultural Employment and Per Capita Kilograms Coal Equivalent Consumed

	ALL NATIONS			AGRICULTURAL			NONAGRICULTURAL			NONINDUSTRIAL			INDUSTRIAL		
	SMALL	LARGE		SMALL	LARGE		SMALL	LARGE		SMALL	LARGE		SMALL	LARGE	
PERCENT IN GOVERNMENT BY POPULATION	-.49	.11 ^a		-.42	.18 ^a		-.50 (-.61)	.20 (.25) ^a		-.58	.08 ^a		-.37 (-.37)	.19 (.19) ^a	
LOG OF THE PERCENT IN GOVERNMENT															
BY POPULATION	-.53	.16 ^a		-.41	.23 ^a		-.55 (-.74)	.18 (.23) ^a		-.56	.14 ^a		-.39 (-.39)	.20 (.20) ^a	
PERCENT IN GOVERNMENT BY THE LOG OF POPULATION	-.46	.26 ^a		-.52	.29 ^a		-.51 (-.46)	.05 (.17) ^a		-.62	.19 ^a		-.22 (-.22)	.03 (.03) ^a	
LOG OF THE PERCENT IN GOVERNMENT BY THE LOG OF POPULATION	-.50	.32		-.47	.31 ^a		-.58 (-.57)	.03 (.17) ^a		-.59	.22 ^a		-.24 (-.24)	.09 (.09) ^a	

NOTE: Population cutting points: All Nations, 5,750,000; Agricultural Nations, 5,200,000; Nonagricultural Nations, 8,600,000 (in parenthesis 5,200,000); Nonindustrial Nations, 8,600,000 (in parenthesis 5,200,000).

^a Not significant at .05 level.

complementary subset of nations, those in which 50% or more of the population is engaged in agriculture, also provide comparable results. In Table 2 the same pattern of mean government employment for the different size categories is present and in Table 3 the split correlations are negative for smaller systems and positive for larger systems.

An alternative control for general technological development is provided by the per capita energy consumption in kilograms of coal equivalent. Following Lenski and Lenski (1974:296), 2,000 kilograms per capita is used as a rough cutting point between developed (industrial) and undeveloped (nonindustrial) nations. This results in 24 nations being classified as developed and 46 being classified undeveloped. The same nonmonotonic pattern of relationship between size and administration emerges in these subcategories of nations as is clearly shown in Tables 2 and 3. The employment of this second measure of development does not materially alter the pattern of relationship initially found in the data. There are some minor differences in the data sets when the different measures of development are used, but the pattern of relationship remains the same. This is illustrated quite clearly in a combined plotting of the category means displayed in Figure 1. The same U-shaped pattern is found in all subsets of the data. The procedures for grouping the data into developed and undeveloped make it impossible for this pattern to be due to the same one or two extreme values.

The fact that this nonmonotonic relationship continues to be present when development is introduced as a control suggests that this pattern of effect is at least partially independent of general technological development. And although there is considerable overlap between the data sets when alternative indicators of development are used—the employment of either indicator results in the same pattern of relationship in two *independent* data sets: one consisting of developed nations and the other consisting of undeveloped nations. The fact that developed nations have, on the average, a higher level of administration than undeveloped na-

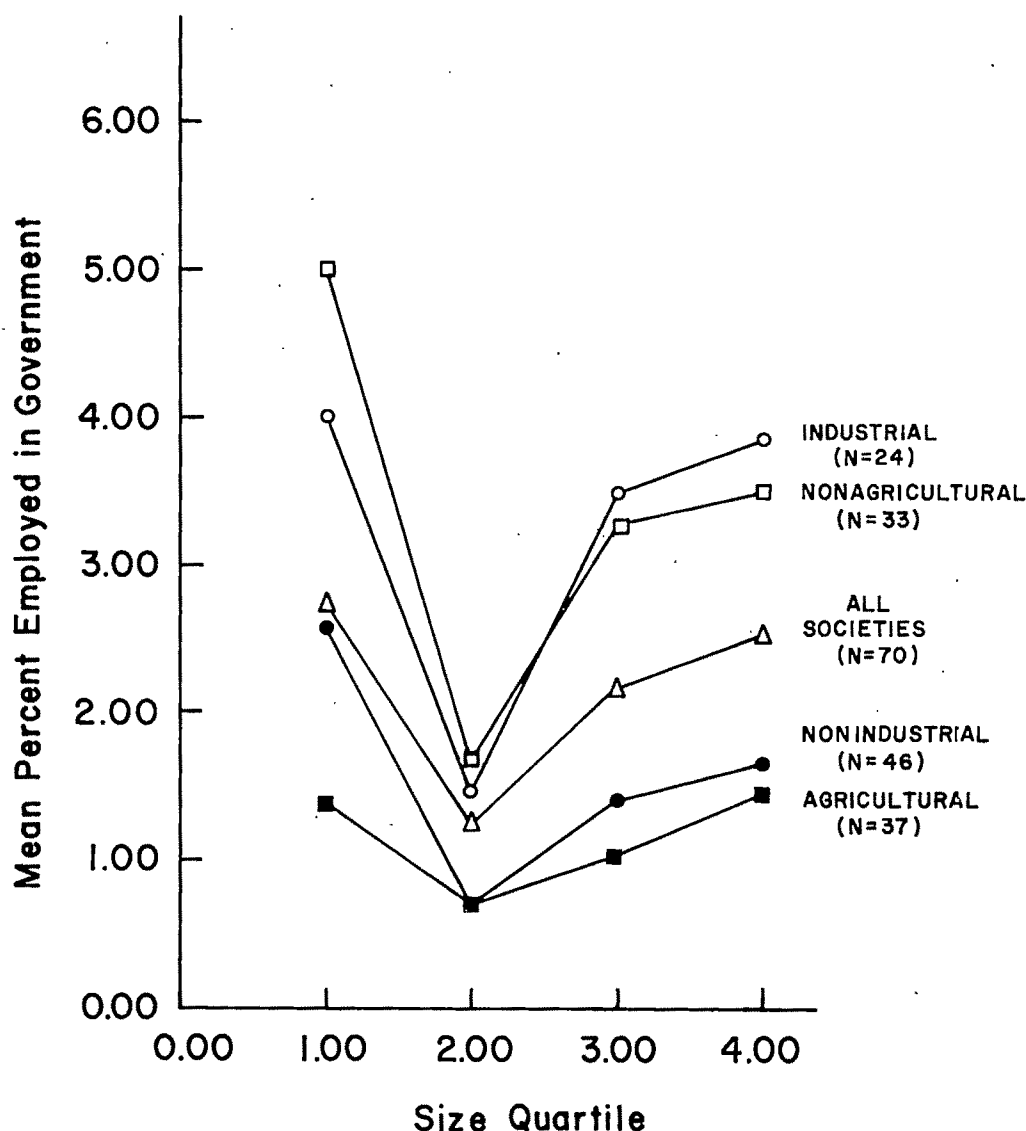


Figure 1. The mean level of government employment by population size quartile

tions is consistent with a major constraint on the size of government—the wealth of the system and its ability to support tertiary employment. But finding the same pattern of relationship within these two sets of nations indicates that although technology may operate as a general constraint on the system, it does not explain the nonmonotonic trend of government employment that accompanies increasing population size.¹¹ One could certainly

argue that an economy of scale is manifested in small nations, but in the face of the evidence adduced thus far, one could not maintain that economies of scale continue to operate in large systems. This change in direction, or nonmonotonicity, while not directly predicted by the Mayhew-Levinger model (although a reversal at some point is suggested by Blau [1970; 1972] and found by Kasarda [1974a]), may well be compatible with it,

¹¹ The persistent nonmonotonic trend found here, caused much consternation and brought up the possibility that some of the choices of indicators and

the adjustments for military personnel might conceivably have caused us to systematically under- and overestimate the relative size of governments for

and with the hypothesis developed from it.¹² The addition of a tipping-point may well complicate the discussion, but it does not disconfirm the hypothesis.

It was hypothesized that the proportion in government would increase with increasing system size, and there is at least some evidence that is the case; but only after some critical value of size is reached. This would suggest that there is, in fact, an economy of scale operating until some critical tipping-point is reached, at which point the trend reverses and the proportion in government begins to *increase* with further increase in size.¹³ The notion of

tipping-point or critical value of size is not totally unexpected in organizational research. Other theorists and researchers have suspected them, and this was at least part of Kasarda's motivation for doing a three-level analysis of the effects of size on administration. It is not surprising to find only a small increase in the relative size of administration in large systems, indicating *attenuation* and *reversal* of the trend of declining administration, but it is surprising that this increase is only manifested at the upper end of the size distribution of nations. Blau's model is consis-

certain size categories. Examination of the data indicated that this was not the case, however. Using a reduced set of data comprised of the 48 nations which were not adjusted or in any way affected by our collection choices, produced nearly identical means for the various subsets of nations, and would not cause the modification of any of the conclusions presented earlier. Even the removal of "outliers" in categories did not reduce the nonmonotonic trend appreciably. The respective category means in the reduced data set were:

All nations: 3.01 (N=12), 1.63 (N=10), 2.25 (N=13), 2.84 (N=13);

Industrial: 4.34 (N=5), 1.73 (N=3), 3.91 (N=5), 4.02 (N=5);

Nonindustrial: 2.60 (N=7), .88 (N=4), 1.44 (N=9), 1.73 (N=10);

Nonagricultural: 5.46 (N=6), 1.59 (N=4), 3.12 (N=8), 3.56 (N=7);

Agricultural: 1.19 (N=6), .88 (N=4), 1.27 (N=7), 1.67 (N=6).

This, of course, does not remove indigenous error of which we are not aware; but the consistency of the pattern and the number of opportunities we have given it to be disproved makes it less and less plausible that this is an artifact.

¹² Anderson and Warkov (1961:26-7) also infer from the slope of the decline in administrative ratio with increasing hospital size that the relationship between size and administration in hospitals may be U-shaped.

¹³ As indicated in the text, critics who have contended that there *may be* statistical or methodological problems that result from correlating system size with the administrative ratio of a system have offered alternative methods of analysis that are free of those "problems." One such method originally proposed by Akers and Campbell (1970) and discussed by Freeman and Kronenfeld (1973) is to regress the logarithm of the number of administrators on the logarithm of system size. This double-logarithmic transformation allows one to determine whether the administrative component grows proportionately or disproportionately with increases in system size simply by inspecting the regression coefficient. If the regression coefficient is less than 1.0, it indicates that administrative employment grows at a slower rate

than the organization increases in size. If the coefficient is greater than 1.0 it indicates that administrative employment grows at a faster rate than the organization increases in size. The first instance illustrates an *economy of scale* in administration, and the second indicates a *diseconomy of scale* in administration (Moore, 1975). If the regression coefficient is 1.0, it indicates that administrative employment grows proportionately with increases in system size. This double-logarithmic transformation has been used in biological contexts to test the "principle of allometry (i.e., that parts tend to maintain relative growth rates which when measured as proportion of the relative growth of the total system are invariant)" (Svalastoga, 1974). Because of their identity with the econometricians' *elasticity coefficients* (Johnston, 1972:51-2), the slopes of the regression equations estimated with the doubly logarithmically transformed data can be interpreted as a measure of their relative growth rates. Thus a slope of 1.00 indicates that the two variables change proportionately, or that Y changes at a rate of 100% for every change in X. A slope of 1.6 would indicate that Y grew 60% faster than X, and a slope of .60 would indicate that Y grew at only 60% of the rate of X (Svalastoga, 1974:55). This broadens the interpretation put on this coefficient by Freeman and Kronenfeld (1973), and may prove useful in interpreting the coefficients reported below.

Since this method detects departures from *proportionality*, it can be used to verify the results of the analyses that employed administrative ratio to determine the effects of increasing size on the relative size of the administrative component of nations. The coefficients displayed below confirm the conclusions drawn earlier. Government employment increases at a slower rate than population size in small societies ($b=.50477$) while in large societies it increases at a faster rate than population ($b=1.26928$). Further analysis also indicates that the nonmonotonic trend is present within the various categories of general technological development. The respective slopes are: agricultural, small $b=.57635$, large $b=1.24063$; nonindustrial, small $b=.37897$, large $b=1.19073$; nonagricultural, small $b=.66832$, large $b=1.02299$; industrial, small $b=.82908$, large $b=1.07835$. A more complete examination of the results of this method of analysis and its rationale are provided in Nolan (1978).

tent with such a threshold, but one might have expected it to be reached at a much lower value of size, perhaps below that of even a small nation. Instead the relative size of administration in societies of increasing size corresponds, in part, to the distribution of administrative ratio found in organizations of increasing size. The difference being that there is a mild increase in administration in the upper size range for nations, while in formal organizations there was only an attenuation in the rate at which the administrative ratio declined.

However, if one is willing to grant that with increasing size and its attendant economies of scale that administrative capacity increases, then one is forced to conclude that the administrative ratio is growing at the same time that it is becoming more *effective*. This would appear to have been the case in the United States, 1900–1949 (Fabricant, 1949; 1952).

Review of some factors affecting the trend of government productivity—the use of improved technology and equipment, the spread of the merit system, the introduction of centralized purchasing, and various other advances in public administration—leaves the strong impression that the savings effected by their means have been far from negligible. (Fabricant, 1949:24)

... [T]he long term trend in government's productivity has probably been upward. (Fabricant, 1949:25)

This leads Fabricant to conclude that even in the much maligned U.S. government bureaucracy, little, if any, increase in government employment has been caused by declining output. Quite the contrary, he maintains that output has probably increased, and Downs (1967) makes a similar point, in a more general context when he argues that bureaus suffer from the fact that they are constantly compared with an idealized and unrealistic picture about how private organizations operate and how employees in them function. The tireless, dedicated employee is a myth in private industry and such comparisons are highly misleading; a comparison of actual outputs would be quite interesting, and conceivably might indicate that the reverse is closer to the truth.

A quite different pattern of relationship

emerges, however, with the more direct indicators of population size and concentration. Urbanization is positively related to the relative size of government, and unlike the relationship with population size, this relationship appears to be monotonic. The correlation for all 70 nations is .54, indicating that this variable accounts for about 30% of the variance in the relative size of government. In small systems, those with populations less than 5,750,000, the relationship is slightly attenuated but it does not change sign ($r=.44$). The correlation for small societies may be lower because the cut point of 100,000 would make the urbanization measure more sensitive to variation in large systems, only at the expense of desensitizing it to variation in small systems. This is a result of the fact that nations that do not have a single city of that size are all classified as being 0% urban even though they may differ in population concentration. In large systems, those with populations greater than 5,750,000, where the measure is expected to be more sensitive to actual variation in size and concentration, the relationship increases to $r=.69$, indicating that nearly 47% of the variation in the relative size of government is explained by urbanization. The alternative measure of population distribution confirms the relationship found with urbanization. The correlation between *concent*, an indicator of the relative concentration of people, and the relative size of government is .30 for all systems (examination of the scattergram indicates that an outlier attenuates the overall correlation) and this correlation is .55 in small societies and .69 in large societies. The results using these two more direct indicators of population concentration and size are therefore different than those that examined the effects of size alone. These associations might be larger and their monotonicity may be due to the fact that these measures simultaneously take into account both population size and population concentration and this might suggest that controlling for population concentration would wipe out the nonmonotonic relationship between population size and administrative intensity. However in Table 5 the same nonmonotonic pattern is clearly present

Table 4. Zero-Order Correlations of the Percent Employed in Government with Measures of Urbanization and Population Concentration and Partial Correlations Controlling for General Technological Development

	URBAN N=64 ALL SYSTEMS	CONCENTRATION (CONCENT) N=58
PERCENT EMPLOYED IN GOVERNMENT	.54	.30
	SMALL SYSTEMS	
PERCENT EMPLOYED IN GOVERNMENT	.44	.55
	LARGE SYSTEMS	
PERCENT EMPLOYED IN GOVERNMENT	.69	.69
	CONTROLLING FOR TECHNOLOGY ^a	
COAL	.58 (53) ^b	.33 (53)
SMALL	.47 (19)	.55 (19)
LARGE	.63 (31)	.71 (31)
COALCLOG	.41 (53)	.30 (53)
SMALL	.37 (19)	.56 (19)
LARGE	.50 (31)	.58 (31)

KEY: COAL = Total energy consumed in kilograms coal equivalent regressed on population.

COALCLOG = Log of the kilograms coal equivalent consumed per capita.

^a All correlations significant at the .05 level.

^b Degrees of freedom in parenthesis.

when controls for concentration are introduced. The nonmonotonic relationship between size and administrative intensity, therefore, is not explained by the relative concentration of the population, and it also can be seen in Table 4 that the monotonic relationship between administrative ratio and direct measures of size and concentration is not explained by general technological development.

Although there are differences between the two analyses of the effects of population size and concentration on administrative intensity, the results of both analyses are consistent with predictions made from the density of interaction model developed by Mayhew and Levinger (1976a) and with Blau's (1970; 1972) formal theory of differentiation. The nonmonotonicity of the size-administrative intensity relationship might be taken as an indication that social systems constitute a separate level of analysis, rather than being merely overly large formal organizations. This would explain why the full range of the size-administrative intensity relationship is found when the analysis is performed on social systems. Being a separate level of analysis (*sui generis*), social systems do not represent merely the upper range of the organization size scale. Whether this

is the case or not, however, in large societies, regardless of technological development, increases in size produce disproportionate increases in government employment. The fact that urbanization and population concentration measures evidence a strong monotonic relationship with administrative intensity suggests that the ecological development of the system has a direct effect on the level of administration which is independent of size.¹⁴

The primary objective of this research has been to determine the effects of increasing system size on administration, but it has been assumed from the outset

¹⁴ This idea is supported by the fact that associations between the percent urban and the proportion employed in government are higher ($r=.66$) than those between the total urban population (percent urban \times population) and the proportion employed in government ($r=.30$, and $r=.35$ with the log of total urban population). Even when both the total urban population and the proportion employed in government are converted to logarithms to correct for skew, the association only increases to .47, while the association between the log of the proportion employed in government and the percent urban is .67. These correlations indicate that the *degree* or *extent* of urbanization is a better predictor of government size than is the actual size of the urban population. Controlling for population concentration or the percent urban does not remove the nonmonotonic pattern of relationship between population size and the proportion employed in government, however.

Table 5. Partial Correlations of the Log of Population Size and the Percent Employed in Government Controlling Relative Population Concentration and Average Distance^a

	CONTROLLING FOR CONCENTRATION	CONTROLLING FOR AVERAGE DISTANCE	CONTROLLING FOR CONCENTRATION AND AVERAGE DISTANCE
	POPLOG	POPLOG	POPLOG
ALL NATIONS PERCENT IN GOVERNMENT	.30 (55) ^b	.08 ^c (55)	.13 ^c (54)
SMALL NATIONS PERCENT IN GOVERNMENT	-.43 (20)	-.37 (20)	-.40 (19)
LARGE NATIONS PERCENT IN GOVERNMENT	.43 (32)	.10 ^c (32)	.32 (31)

NOTE: Population cutting point 5,750,000.

^a *Average Distance* is computed in the following way: .52 times the square root of area. Under the assumption that people are uniformly distributed over a square area, this figure reflects the average distance between random pairs in that system. Thus it is an attempt to take into account (a priori) the effects of the average distance between people. For a further discussion of this measure and its limitations see Nolan (1978), for a discussion of its theoretical importance in the density of interaction model see Mayhew and Levinger (1976a).

^b Degrees of freedom in parenthesis.

^c Not significant at the .05 level.

that *Development* is also an important determinant of a system's need and ability to support a large administrative component. Levels of industrial and economic development are an important determinant of the system's ability to produce a surplus and maintain a large tertiary sector, and GNP itself is in part an index of the amount of commercial activity in the system. Likewise a high degree of agricultural employment can be seen not only as an indicator of population dispersal but also as an indication that commercial activity is at a lower level than in a more industrial or developed system. Development therefore was anticipated to have an effect on both the level of system activity and on the relative size of governments. This assumption has been borne out in both analyses presented here. Yet it is obviously the case that the choice of indicators used in these analyses gives differential advantage to either system size or system development as an explanatory variable. Examining only the effects of size (population), shortchanges size in the competition to explain variance in the administrative ratio, while the use of an urbanization measure as an index of size and population concentration obviously shortchanges system development since

the measure does not merely reflect population size and concentration but also is related strongly to the system's level of development. The empirical interrelation of these two sets of variables makes it difficult to disentangle and ascertain the relative importance of these analytically separable determinants of administrative growth, but this analysis has presented evidence that both affect the relative size of the administrative component of nations.

CONCLUSIONS

This cross-sectional analysis has presented evidence that at the societal level of analysis a nonmonotonic U-shaped relationship exists between size and administrative intensity. Mayhew and Levinger's (1976a) argument that interaction density can be expected to increase with increases in system size, and Blau's (1970; 1972) argument that structural complexity can be expected to increase with increases in system size have been offered as explanations for the failure of large societies to continue to display economies of scale in administration after a size tipping point is reached. It is thus the case with administrative intensity, and

perhaps with other organizational traits as well, that isomorphism between formal organizations and societies cannot be assumed to exist even though principles of organization continue to hold. Thus the effects of the scale of organization require that extensions of formal organization findings and generalizations be investigated empirically rather than being assumed to hold logically. It also can be seen from this analysis that the discrepancy between Kasarda's (1974a) findings and Noell's (1974a) findings are not merely the result of their respective choice of indicators of administrative intensity (Kasarda, 1947b; Noell, 1974b), since we have here confirmed Kasarda's hypothesis in an analysis that employs Noell's indicator of administration. The fact that disproportionate increases in government employment are found in a number of large societies at varying levels of general technological development also indicates that this growth in administration results at least in part from the imperatives of system size and is not wholly a result of specific political programs, histories, or technological advance as some observers of western industrial societies have implied (Fabricant, 1949; 1952; Lenski and Lenski, 1974).

REFERENCES

- Akers, Ronald and Frederick L. Campbell
1970 "Size and the administrative component in occupational associations." *Pacific Sociological Review* 13:241-51.
- Anderson, Theodore R. and Seymour Warkov
1961 "Organizational size and functional complexity: a study of administration in hospitals." *American Sociological Review* 26:23-8.
- Elalock, Hubert M.
1960 *Social Statistics*. New York: McGraw-Hill.
- Blau, Peter M.
1970 "A formal theory of differentiation in organizations." *American Sociological Review* 35:201-18.
1972 "Interdependence and hierarchy in organizations." *Social Science Research* 1: 1-24.
1974 *On the Nature of Organizations*. New York: Wiley.
- Blau, Peter M. and Richard A. Schoenherr
1971 *The Structure of Organizations*. New York: Basic Books.
- Boulding, Kenneth E.
1953 "Toward a general theory of growth." *Canadian Journal of Economics and Political Science* 19:326-40.
- Downs, Anthony
1967 *Inside Bureaucracy*. Boston: Little, Brown.
- Durkheim, Emile
1964 *The Division of Labor in Society*. New York: Free Press.
- Fabricant, Solomon
1949 "The rising trend of government employment." Occasional Paper 29. New York: National Bureau of Economic Research.
1952 *The Trend of Government Activity in the United States since 1900*. New York: National Bureau of Economic Research.
- Freeman, John Henry and Jerold E. Kronenfeld
1973 "Problems of definitional dependency: the case of administrative intensity." *Social Forces* 52:108-21.
- Fuguitt, Glen V. and Stanley Lieberman
1974 "Correlation of ratios having common terms." Pp. 128-44 in Herbert L. Costner (ed.), *Sociological Methodology 1973-1974*. San Francisco: Jossey-Bass.
- Heise, David R.
1975 *Causal Analysis*. New York: Wiley.
- Johnston, J.
1972 *Econometric Methods*. 2nd ed. New York: McGraw-Hill.
- Kasarda, John D.
1974a "The structural implication of social system size: a three-level analysis." *American Sociological Review* 39:19-28.
1974b "On social system properties: an alternative view." *American Sociological Review* 39:886-8.
- Kasarda, John D. and Patrick D. Nolan
1978 "The use of administrative ratios in organizational research: conceptual and methodological issues." Unpublished paper.
- Kimberly, John R.
1976 "Organizational size and the structuralist perspective: a review, critique, and proposal." *Administrative Science Quarterly* 21:571-97.
- Lenski, Gerhard and Jean Lenski
1974 *Human Societies: A Macrolevel Introduction to Sociology*. New York: McGraw-Hill.
- MacMillan, Alex
1975 "Ratio variables, spurious correlation, and inference in sociological research." Mimeo. Queens University at Kingston, Ontario.
- Mayhew, Bruce H.
1973 "System size and ruling elites." *American Sociological Review* 38:468-75.
- Mayhew, Bruce H., Roger Levinger, J. Miller McPherson and Thomas James
1972 "System size and structural differentiation in formal organizations: a base line generator for two major theoretical propositions." *American Sociological Review* 37: 629-33.
- Mayhew, Bruce H. and Roger L. Levinger
1976a "Size and the density of interaction in human aggregates." *American Journal of Sociology* 82:86-110.

- 1976b "On the emergence of oligarchy in human interaction." *American Journal of Sociology* 81:1017-49.
- Mitchell, Brian R.
- 1965 *Historical Statistics of Canada*. Cambridge, Eng.: University Press.
- Moore, Frederick T.
- 1975 "Economies of scale: some statistical evidence." Pp. 125-36 in Edwin Mansfield (ed.), *Microeconomics*. 2nd ed. New York: Norton.
- Noell, James J.
- 1974a "On the administrative sector of social systems: an analysis of the size and complexity of government bureaucracies in the American states." *Social Forces* 52:549-58.
 - 1974b "System level and system property." *American Sociological Review* 39:885-6.
- Nolan, Patrick D.
- 1978 "Population size, the density of interaction and the relative size of the administrative component of nations." Ph.D. dissertation, Department of Sociology, Temple University.
- Paxton, John (ed.)
- 1972- *The Statesman's Year-Book*. New York: St. Martin's.
 - 1973 *St. Martin's*.
- Pearson, Karl
- 1897 "On a form of spurious correlation which may arise when indices are used in the measurement of organs." *Proceedings of the Royal Society of London*.
- Rupprecht, Erhardt O.
- 1974 "How big is government?" *Finance and Development* 11:29-33.
- Rushing, William A.
- 1966 "Organizational size and administration: the problems of causal homogeneity and a heterogeneous category." *Pacific Sociological Review* 9:100-8.
- Sachs, Moshe Y. (ed.)
- 1971 *Worldmark Encyclopedia of Nations*. New York: Worldmark Press; distributed by Wiley.
- Schuessler, Karl
- 1974 "Analysis of ratio variables: opportunities and pitfalls." *American Journal of Sociology* 80:379-96.
- Sjoberg, Gideon and Roger Nett
- 1968 *A Methodology for Social Research*. New York: Harper and Row.
- Svalastoga, Kaare
- 1974 *The Social System*. Denmark: Akademisk Forlag.
- The Europa Yearbook
- 1973 London: Europa Publications.
- Taylor, Charles L. and Michael C. Hudson
- 1972 *World Handbook of Political and Social Indicators*. New Haven: Yale University Press.
- Thompson, D'Arcy
- 1917 *On Growth and Form*. Cambridge, Eng.: Cambridge University Press.
- Thompson, James D.
- 1967 *Organizations in Action*. New York: McGraw-Hill.
- United Nations
- 1971 *Production Yearbook*. New York: United Nations.
 - 1973 *Statistical Yearbook*. New York: United Nations.
- Urquhart, N. C. (ed.)
- 1962 *Abstract of British Historical Statistics*. Cambridge, Eng.: University Press.
- U. S. Department of State
- 1969 *Status of the World's Nations* (August).
- Webb, Eugene J., Donald T. Campbell, Richard D. Schwartz, and Leë Sechrest
- 1966 *Unobtrusive Measures: Non-Reactive Research in the Social Sciences*. Chicago: Rand McNally.

POSSIBLE CAUSES OF THE APPARENT SEX DIFFERENCES IN PHYSICAL HEALTH: AN EMPIRICAL INVESTIGATION*

WALTER R. GOVE
Vanderbilt University

MICHAEL HUGHES
Vanderbilt University

American Sociological Review 1979, Vol. 44 (February):126-146

For the past fifty years it has been consistently reported that men have higher rates of mortality, while women have higher rates of morbidity. The higher rates of mortality for males can be largely explained by the fact that they have higher rates for the chronic diseases which are the leading causes of death. The explanation of why women have higher rates of morbidity, however, remains unanswered. Recent literature suggests three possible explanations: (1) a greater willingness among women as compared with men to report they are ill and/or to react overtly to an illness, (2) the greater ability of women to adopt the sick role due to their lack of obligations, and (3) the possibility that the reported differences reflect real sex differences in illness. This paper evaluates these explanations and provides support for the view that the sex differences in morbidity are real. The data analyzed show that when one controls for marital status, living arrangements, psychiatric symptoms, and nurturant role obligations, the health differences between men and women disappear.

In recent years there has been considerable attention paid to sex differences in morbidity and mortality. Perhaps the most notable aspect of mortality rates during the twentieth century in western society is that there has been a sharp increase in life expectancy, and this increase has been much more marked for women than for men. For example, as Waldron (1976:2) has noted, for the United States in 1920 the life expectancy was 56 years for women and 54 for men, a difference of two years, while by 1970 women's life expectancy was 75, and this was almost eight years longer than that of men. There is at present considerable debate over why men typically die at a much earlier age than women. It has been argued that the different mortality rates of the sexes are primarily due to genetic differences (e.g., Madigan, 1977; Moriyama et al., 1971), to the heavier use of tobacco among men (e.g., Retherford, 1972; 1975; Preston, 1970), and to the masculine sex role which leads to both greater risk taking and to greater experience of occupational stress

(e.g., Conrad, 1962; Waldron, 1976; Russek, 1959; 1964; also see Johnson, 1977). However, in the present paper we are concerned with the causes of sex differences in morbidity and not mortality. We thus are not particularly concerned with causes of sex differences in mortality (an unresolved issue), but we are concerned with the existence of such differences, for they inevitably are a part of the context for viewing sex differences in morbidity (Nathanson, 1977).

In our society sex differences in statistics on morbidity are as consistent as sex differences in mortality, with one basic difference: The pattern is reversed, for adult women have, or at least appear to have, higher rates of physical illness. For example, in the 1972 National Health Survey, adult women had a greater incidence and number of acute conditions, more restricted activity (including both bed disability and the simple nonperformance of one's primary activities), more physician visits, and more discharges from short stay hospitals (Nathanson, 1975:57). These data are consistent with virtually all other recent data on sex differences in morbidity in western industrial societies (Nathanson, 1977; Verbrugge, 1976; 1977; Mechanic, 1976). There is, however, one rate that, while very small, is inconsistent with this pattern. Males are more likely to

* Address all communications to: Walter R. Gove; Department of Sociology; Vanderbilt University; Nashville, TN 37235.

The research for this project was supported by NICH grant #R01 HD06911-01 and NSF grant #SOX 76-15103. We would like to thank Lisa Heinrich for her comments on an earlier draft.

have more serious and incapacitating chronic conditions (Nathanson, 1975; 1977; Verbrugge, 1976; 1977).

As Nathanson (1977) notes, "the apparent contrast between excess mortality and female excess morbidity—'women get sick and men die'—was observed in England as early as 1927 (Dunnell and Cartwright, 1927), and [there] has been exciting sporadic comment since that time." In the past few years there have been a number of papers which, noting the sex differences between morbidity and mortality, have attempted to explain the higher rates of morbidity among women. These efforts have concluded that the apparent differences do not reflect real sex differences in illness (see especially Mechanic, 1976; Cole, 1974; Verbrugge, 1976; 1977; and for a much more qualified statement see Nathanson, 1975). This conclusion would seem to follow logically from the sex differences in mortality, where males have the higher rate. However, when one turns to the data on specific types of physical disorders, the apparent contradiction between the sex differences in morbidity and mortality largely disappears. As Verbrugge (1977:285) reports,

when we consider chronic ailments that force a person to restrict activity, a pronounced male excess appears for the majority of conditions. Among them are several leading causes of death. Females have excess morbidity for one important killer (diabetes mellitus) and for such less fatal conditions as mental/nervous conditions, varicose veins, arthritis/rheumatism and genitourinary conditions—causes of much greater morbidity than mortality.

Verbrugge (1977:291) summarizes the data by stating that "most leading causes of death show male excess rates for both morbidity and mortality. The sicker sex does have the higher death rate." It is particularly worth noting that the only major cause of mortality where women have a higher mortality rate is diabetes mellitus, and it is also the only serious (i.e., potentially fatal) chronic condition on which women have a higher morbidity rate than males. In short, "acute illnesses are much more common than chronic ones" and the "leading causes of death do

not tend to be the leading causes of illness" (Verbrugge, 1977:291). This clearly suggests that the sex differences in morbidity are due to relatively minor illnesses. And in fact the study of Hinkle et al. (1960), who looked at employed men and women with comparable backgrounds and jobs, found this to be the case. As has been the case in virtually all studies, they found women to have higher rates of morbidity than men. However, they found that the differences between men and women

could be attributed to a dozen or more symptoms, to wit: the common cold; "grippe"; "sore throat"; acute gastroenteritis; dysmenorrhea; myalgia; "myositis" and symptoms of muscular tension; minor cuts and bruises; headaches; and minor disturbances of work, thought and behavior. (Hinkle et al., 1960:1331)

In summary, the apparent higher rates of morbidity among women are based almost exclusively on higher rates of mild transitory disorders, and the task of determining the cause(s) of the apparent higher rate of morbidity among women must focus on these types of disorders. As is demonstrated below, the conclusion that women do not have higher rates of morbidity than men is based more on supposition than hard evidence and the issue warrants further investigation. Drawing on the work of Nathanson (1975:59) and Verbrugge (1977), we will be concerned with three plausible explanations of the sex differences in morbidity: (1) differences in the general *willingness* of men and women to report they are ill or overtly to react to an illness (i.e., act as if they are ill), (2) the greater ability of women to adopt the sick role due to the characteristics of their role obligations, and (3) the possibility that the differences reflect real sex differences in illness.

PREVIOUS ASSESSMENTS OF THE APPARENT HIGHER MORBIDITY RATE IN WOMEN

The Higher Rate As an Artifact

As noted above, one of the recurring themes in the literature is that women appear to have higher rates of illness because they are more likely to perceive symptoms, are more willing to articulate

them, are more likely to seek professional help and are treated differently from men by the medical profession. For example, Verbrugge (1977:292) states,

Females may have lower thresholds for perceiving discomfort, whether for social (Mechanic, 1965) or biological reasons. Moreover, regardless of a threshold, females may be more willing than males to report a perceived discomfort (Barker, 1953; Chesler, 1972; Enrenreich and English, 1973; Mechanic, 1965; Phillips and Segal, 1969). In addition, females may be socialized (more so than males) to take corrective measures when ill (Chesler, 1972).

Verbrugge goes on to assert that "when illness data are limited to conditions [which receive medical attention or restrict activities], and important sex differential *automatically* enters the data (Mechanic and Newton, 1965)" (emphasis added). Citing Lelanne and Lelanne (1973), Verbrugge (1977:293) also posits a sex bias in the activities of physicians. Clearly implied is that the higher morbidity rates of women do not reflect real rates of illness. And, in fact, in discussing a slight narrowing of the gap in certain indicators of morbidity, Verbrugge (1976:392) argues "females are *choosing* to be less bothered by headaches and earaches, and they are less likely to cut down on activities for these problems" (emphasis added). A generally similar presentation is to be found in Mechanic's (1976) assessment of the reasons for the higher rates of morbidity in women, and an almost identical argument is presented by Dohrenwend and Dohrenwend (1977) regarding why women appear to have higher rates of mental illness.

The basic limitation with the literature cited by Verbrugge, as well as the literature cited by Mechanic, is that while they all present arguments that are similar and/or data that are compatible with the position that the apparent higher rates of women are artifactual, *none* of the works cited presents *evidence* that would come even close to demonstrating this is the case. In short, this body of literature is based on the beliefs of the authors who provide the appearance of empirical support for their assertion by a process of mutual citation.

The only systematic effort to marshal evidence for the higher rates of women being artifactual is in the paper by Verbrugge (1977). It is her position that in an interview situation women are more likely to admit to various forms of ill health than men. The only evidence she presents for the interview effect she postulates is that in the health examination survey where the respondents fill out a questionnaire in private the extent to which men admit to having symptoms of mental illness is smaller than in the Health Interview Survey where the respondents are directly interviewed. There are two fundamental reasons for discounting Verbrugge's interpretation, one dealing with the literature on response bias and one dealing with the items in the two surveys. A review of the evidence by Sudman and Bradburn (1974) on response effects suggests there is no evidence for the interview effect postulated by Verbrugge while there is evidence for the opposite effect; namely, males are more likely than females to underreport undesirable items on a self-administered questionnaire (Sudman and Bradburn, 1974:108-9). Even more critical to Verbrugge's argument is that the two measures used are so different that a comparison is inappropriate. The self-administered measure involves a set of twelve generally minor psychiatric symptoms which the respondent reports as having or not having experienced, whereas the interview survey involves the respondents first stating they have a disability which impairs their performance and then subsequently indicating the disability is due to a mental condition.

As noted, for the vast majority of diseases Verbrugge finds that the sex with the highest morbidity rate is the sex with the highest mortality rate. However, among all the diseases reviewed by Verbrugge there are nine cases where there appears to be a sex reversal and in all cases women have higher morbidity rates and males have higher mortality rates. Although the morbidity rates for some of these disorders are fairly high, in all cases the mortality rates are very low. As Verbrugge notes there are a number of problems with many of these comparisons. For example women report varicose veins

much more frequently than men, whereas men "die of varicose veins" much more frequently than women. However, in the data on mortality due to varicose veins, this disease is grouped with other disorders (probably because mortality due to varicosity is a very rare event and usually confounded with other vascular disorders) and it may well be that men are dying of these other disorders and not of varicose veins and that there is in fact no sex reversal. According to Verbrugge (1977:289) of the nine diseases with an apparent sex reversal there are three diseases where the classification of the disease for morbidity and mortality are very comparable, namely (1) mental/nervous conditions, (2) infective and parasitic diseases, and (3) hypertension without heart disease. We are uncertain how one dies of a mental/nervous condition (neurological conditions and suicide are dealt with elsewhere) and, as Verbrugge (personal communication) notes, with disease where mortality is either very rare (or nonexistent) there is a serious problem of coding errors. The infective and parasitic diseases almost invariably involve acute nonfatal conditions (Verbrugge, 1977:294) and it is our view that the comparison of the sex ratio where a particular combination of a large set of diseases produces high morbidity rates with the sex ratio where the same disorders, in what is probably a very different combination, produce a very low mortality rate is of questionable validity. This leaves hypertension without heart disease, and the evidence here of a sex reversal is substantial. This reversal is based on evidence showing women more likely than men to say they have "high blood pressure" when asked this in the Health Interview Survey (Verbrugge, 1977:293). Since hypertension is a disorder which does not result in symptoms observable to the individual, and since it requires medical verification, unless the individual indicates that a physician has made such a diagnosis, the response is highly suspect. Women are much more likely to feel tense and anxious (Gurin et al., 1960; Gove and Tudor, 1973; Gove, 1978) and thus these higher rates of what Verbrugge calls "hypertension" may simply reflect higher rates of psychological tension. This, how-

ever, is a somewhat speculative interpretation and it is probably best to tentatively treat the data on hypertension as involving a real sex reversal.

In summary, the view that the high rates of morbidity among women are artifactual, while popular has, as a general proposition, very little empirical support. Nevertheless, while it is clearly not proven it has not been disproven and thus remains as a plausible explanation. While we accept the plausibility of the argument, we are inclined to believe it to be incorrect. There are essentially two reasons for our pessimism. First, persons taking this position (particularly Mechanic, 1976) have relied heavily on the article by Phillips and Segal (1969), which argued that the higher rates among women of psychological and psychophysiological symptoms, as measured by the Langner scale, are an artifact of women being more willing to admit to such symptoms. However, with the use of the techniques subsequently developed by Phillips and Clancy (1970; 1972) specifically to test this type of proposition, it has been shown that the Phillips and Segal position is incorrect and that there is no tendency for the rates of women, on the Langner scale or a variety of other scales, to be inflated in the direction of poor mental health (Clancy and Gove, 1974; Gove et al., 1976; Gove and Geerken, 1977a). Second, as the review of the evidence by Gove (1978) shows, in the area of mental illness, after severity of disorder is controlled for, there is no evidence that females are more likely than males to seek professional help or to be processed by medical and mental health professionals in ways that would inflate the rates of women. We would note that the relevance of this evidence is indirect, as it deals with mental illness; however, persons who have argued that the higher rates of morbidity among women for physical illness are artifactual also have drawn primarily on studies dealing with mental illness to support their position. In short, the available evidence, at least by inference, suggests that the higher rates of morbidity reported for women primarily reflect differences in illness behavior or real differences in illness.

Persons who have raised the issue of the

higher rates of morbidity among women being an artifact of the data collection process have pointed to one very real issue. Self-reported morbidity rates tend to be higher than the morbidity rates reported for others by informants. The studies which use a subject both as a respondent providing a self-report and as an informant do tend to have inflated rates for women because the subjects are typically women (Nathanson, 1975; 1977; Verbrugge, 1976; Mechanic, 1976). However, this is not a problem with the majority of studies on morbidity, nor is it an issue with the present study.

The Correspondence between the Women's Role and the Sick Role

As noted, Nathanson (1975:59) indicates that a possible explanation of the higher rates of morbidity among women is that "the sick role is relatively compatible with women's other role responsibilities, and incompatible with those of men." In his overview, Mechanic (1976:37), having a favorable reaction to this proposition, states that "the hypothesis that women's usual role obligations are more consistent with being sick and seeking care is plausibly worthy of more careful consideration. . . ." Mechanic (1976:37-8) then goes on to indicate that the data on the limitation of activities are generally consistent with this formulation. Verbrugge (1977:292) goes further, flatly stating that "females have generally fewer time constraints than males, which allows them to seek medical activity more readily than males." (Also see Verbrugge, 1976.) There is one very serious problem with this proposed explanation of sex differences in morbidity, namely, that it is untested.

We believe that the role obligations of men and women differ and that the role obligations are related to sick role behavior. However, we doubt that the above hypothesis accounts for the higher rates of morbidity among women. As is clearly implied by Mechanic (1976:37) and made very explicit by Verbrugge (1976; 1977), this hypothesis rests on the premise that women, on the average, have fewer fixed obligations and more free time, and that

this is what allows them to adopt sick role behavior. However, the very extensive time budget studies that have recently been completed in the United States and eleven other industrial nations demonstrated that this is not the case (Szalai, 1972). As Szalai (1975:385) concludes in his article summarizing these studies, "wives, employed or not, are still victims of old fashioned attitudes, and work for longer hours than men." Another source of negative evidence is the study by Hinkle et al. (1960), who studied comparable groups of men and women employed in comparable jobs. If the above hypothesis is correct, then since these women presumably have as many role obligations as the men, their morbidity rates should not be higher than those of the men. However, Hinkle et al. (1960) found that the women had more episodes of illness and more disability days than the men.

The Possibility That the Higher Morbidity Rates among Women Reflect Real Differences in Illness

In the recent discussions there has been no attempt to assess seriously the possibility that the statistics on the sex differences in morbidity reflect real differences in illness. This is reasonable because there is no solid data on which such an assessment can be made, and Nathanson (1975; 1977), probably wisely, simply avoids the issue. Mechanic (1976:38), however, asserts in his conclusion that "it is difficult to support the argument that women have more illness than men," and he goes on to indicate that the differences found are due to cultural and social factors. Verbrugge (1976:399) goes further, stating, "we suspect that males are physically sicker from both acute and chronic conditions, but that social and psychological factors enhance female reports to such an extent that a female excess appears overall."

The little effort that has been directed at assessing the relationship of morbidity to actual illness has focused exclusively on the relationship of mental illness to morbidity. Although we are primarily concerned with physical illness and morbid-

ity, it is worthwhile looking at these evaluations. Gove and Tudor (1973) found that when mental illness is defined as a disorder involving distress and/or mental disorganization, in modern western industrial societies, women on *all* indicators uniformly have higher rates of mental illness. This article is controversial and has received considerable scrutiny; however, from the subsequent research and debate it has become clear that when mental illness is defined in this manner women consistently have higher rates as is suggested by the fact that Gove and Tudor's strongest critics, the Dohrenwends, concur that this relationship exists (Dohrenwend and Dohrenwend, 1976; 1977). However, Dohrenwend and Dohrenwend strongly believe that the definition of mental illness should be greatly broadened to include a variety of forms of deviant behaviors which involve aggressive asocial and antisocial acts and which could be classified as forms of the personality disorders. Mechanic strongly supports the position by Dohrenwend and Dohrenwend. In reference to the study by Gove and Tudor (1973), Mechanic (1976:33) states that "such analyses are useless or worse" and asserts that this is because they "eliminate from consideration such entities as alcoholism, personality disorders, or acting out behaviors." This statement by Mechanic is, in fact, the only statement in the literature we have reviewed which attempts to justify the conclusion that the apparent higher rates of *physical illness* among women do not reflect real differences in illness.¹

¹ It is ironic that they are attacking Gove for being unaccepting of and directly abusing the psychiatric perspective, while other sociologists have roundly attacked Gove for being overly accepting of the psychiatric perspective. For example, Scheff (1975:256) asserts that Gove's "imagination is so captured by the psychiatric perspective that his argument turns out to be circular" and later (p. 256) refers to "Gove's exclusive commitment to the psychiatric perspective." The reader who feels that this suggests there may be some inconsistency in Gove's position is referred to Gove (1976) where he discusses this issue. At a time when social scientists have become very critical of the medical profession in general and psychiatry in particular for inappropriately attempting to "medicalize" a number of forms of deviant behavior, including those listed by Mechanic, we find it surprising that such prominent social scientists

Summary of the Literature

It has been proposed that the apparent higher rates of morbidity among women are not due to real differences in illness but to women being more sensitive to their symptoms, more willing to articulate them and more willing to seek professional help. It has also been proposed that because women have more free time and fewer fixed role obligations they are more likely than men to be in a position where they can adopt the sick role and manifest illness behavior. Much of the literature on women and women's roles is consistent with both these formulations and, given the fact that the disorders under consideration are mild and difficult to measure independently, both of these hypotheses seem plausible. However, as we have noted, these hypotheses have not been tested and there are reasons for suspecting that they do not account for the higher rates of morbidity among women. The alternative hypothesis, of course, is that the sex differences in morbidity reflect real differences in illness. This alternative hypothesis has been viewed as improbable; however, it also is untested. In the remainder of the paper we will present evidence to test the hypothesis that the apparent higher rates of morbidity are due to real differences in occurrence of physical disorder.

THE STUDY

Conceptualization

Historically, the medical model has been concerned with physical agents or causes of physical disorders. A small residual category of psychosomatic disorders which were presumed to be caused by psychological distress was considered irrelevant to this model. However, in the past two decades it has become very clear that psychological factors, particularly poor mental health, play an important etiological role in a wide range of disorders not traditionally labeled psychosomatic (e.g., Thurlow, 1967; Moss, 1973;

as David Mechanic and Bruce Dohrenwend and Barbara Dohrenwend would be so certain of their assumption that these "disorders" should be treated as mental illness.

Dohrenwend and Dohrenwend, 1974; Dodge and Martin, 1970; Gove, 1973; Little, 1976; Renne, 1971; Markush et al., 1977). Furthermore, psychological distress both as an etiological factor and as a factor affecting the treatment process is belatedly becoming incorporated into the medical model where it is treated as one of the critical variables (e.g., Engle, 1977).

As noted, the higher rates of morbidity in women are primarily attributable to the manifestation of higher rates of mild forms of physical illness. In general, most of these illnesses would seem to be prime candidates for the categories of physical disorders that are reactive to psychological distress. Hinkle et al. (1960:1333), in fact, concluded that the sex differences in morbidity are largely due to physical illnesses that are a consequence of psychological distress. Furthermore, the items in such widely used mental health scales as the Langner (1962) scale and the HOS scale (McMillan, 1957), were selected solely on the basis of the items' ability to distinguish between persons in good and poor mental health, include a variety of psychophysiological and organic symptoms. This fact suggests that poor mental health is related to the manifestation of a variety of symptoms of physical disorder.

In summary, there are substantial theoretical and empirical grounds for assuming that poor mental health is causally linked to mild forms of physical disorder. *One of the hypotheses guiding the present study is that poor mental health is causally linked to poor physical health and this partially explains the higher rate of morbidity among women.*

The second hypothesis guiding the study is that certain types of role obligations interfere with one's ability to care properly for oneself and thereby produce minor forms of disability, and that such obligations occur more frequently among women and therefore partially account for their higher rate of morbidity. In particular, we are assuming that one of the characteristics of the female's role that distinguishes it from the male's role is that women are obligated to care for others and that such care may interfere with their ability to care for themselves. In particu-

lar, we assume that women, as compared with men, typically have more role obligations that require constant ongoing activities vis-à-vis their spouse, children and others (such as parents) living in the home, and that these obligations can interfere with self-care and have a negative effect on one's health.

Our basic premise is that sex differences in morbidity are due to sex differences in the characteristics of role obligation and mental health, and that if we can control for these differences the sex differences in morbidity will largely disappear. The controls can involve both statistical controls and the selection of certain types of populations. An example of the first case, where statistical controls are of key importance, are married men and women. It is our hypothesis that married women, as compared with married men, have many role obligations that interfere with their ability to take care of themselves, and we know that married women tend to be in poorer mental health (e.g., Gove, 1972; Gove and Geerken, 1977b; Pearlin, 1975; Radloff, 1975). The main instance where we would anticipate few differences between men and women in their morbidity rate is among persons who live alone. For example, men and women who live alone are similar in that they have no obligations to persons living with them (as there are none) and, following Gove and Tudor (1973), one might anticipate men and women who live alone to be in relatively comparable mental health. If we find, as have virtually all other studies, that women have higher rates of morbidity but that these differences disappear when our controls are introduced, then this would virtually eliminate the possibility that the apparent higher rates of morbidity are artifactual or due to greater ability of women to adopt the sick role because they lack obligations toward others.

The data for our analysis was drawn from a survey conducted in Chicago which focused on the effect of household overcrowding on behavior. The sample was comprised of randomly selected adults residing in randomly sampled households in census tracts that were selected to maximize variation between

socioeconomic variables and household crowding. If no one was contacted on the first attempt, three additional calls were made for a total of four contact attempts. We had a 68.1% response rate at the time of the screening interview and a 89.1% response rate for the full interview² (for details of the sampling and methodology, see Gove et al., 1979). We know of no theoretical or pragmatic reason why this method of selection would affect the nature of the observed relationships; nevertheless, one should not generalize the specific values found to any population other than the specific census tracts selected. A second limitation of the sample is that considerably more women (65.8%) than men (34.2%) were interviewed. This over sampling of women appears to be a characteristic of household surveys. For example the other recent survey in Chicago which attempted to preselect the sex of respondent to equalize their number (Ilfeld, 1976) and the overcrowding study by Booth (1976) which attempted to preselect equal numbers of men and women yield both heavily oversampled women. Similarly, the recent national survey by Campbell et al. (1976) also substantially oversampled women. Since we treat men and women separately in our analysis, the undersampling of men should not affect the pattern of the relationships. As we see it, these are the only serious limitations of the sample. We have shown in Gove et al. (1979) that except for

sex, on all demographic characteristics (including levels of household crowding) the characteristics of the sample are virtually identical to those of the population of Chicago and generally similar to the characteristics of the population of the United States.³

Independent Variables

One of the issues we were concerned with was whether or not crowding had a negative effect on physical health. In the interview the respondents were asked five questions, dealing with different facets of the structure of their life, which we felt would affect their physical health. The questions were: (1) Do you think you get enough sleep? (2) If someone else at home is sick with the bug, do you often seem to catch it? (3) When you are *really* sick, are you almost always able to get a good rest? (4) Even when you are really sick, are there a number of chores you just have to do? And (5) When you are really sick is there someone to help take care of you? It is our hypothesis that in fulfilling their socially defined role obligations women, as compared with men, tend to perform nurturant tasks. Thus, when they are in situations where there are others to be taken care of, it will be women and not men who will tend not to get enough sleep, to be more likely to catch "bugs," not to get a good rest when sick, to "have" to perform chores when sick, and not to be as well cared for. The only important exception to this hypothesis is the males who by their situation are forced to play a nurturant role as, for example, males solely responsible for the care of young children.

As noted above, it is also our hypothesis that poor mental health is causally related to poor physical health and that, as females tend to be in poorer mental health than males, this is one of the causes of the higher rate of poor physical health among females. As a measure of poor mental health the respondent was asked if he or

² By historical standards this refusal rate is high. However, it compares quite well with the two most comparable studies, namely, one done with the same general population, in this case the Standard Metropolitan Statistical Area of Chicago in 1972 (Ilfeld, 1976) and the other being the only major survey on the effect of overcrowding on behavior conducted in a city in North America, in this case Toronto (Booth, 1976). As noted, we had a refusal rate of 31.9% on the screening interviews and a 10.9% refusal rate after the screening interview. In the other Chicago study the refusal rate for the screening interviews is presented as 31%, but they present no information on refusal rate after the respondent was selected. In the Toronto study they screened 17,000 households to select 862 households for interviewing. No refusal rate is presented for the screening interviews. Among the households selected after the screening interviews, they experience a 35.3% refusal rate per household, and as they were trying to interview both husbands and wives but were often unsuccessful, they had an overall respondent refusal rate of 50.3%.

³ Although we have an undersampling of males, we would note that the demographic characteristics of the males in our sample are virtually identical to the demographic characteristics of males in Chicago in 1970.

she had experienced the following symptoms often, sometimes or never during the past few weeks: (1) thought that people were saying all kinds of things behind your back; (2) bothered by special fears; (3) were so blue or depressed that it interfered with your daily activities; (4) thought that it was safer to trust nobody; (5) bothered by nervousness, such as being irritable, fidgety or tense; (6) were in low spirits; (7) bothered by special thoughts; (8) were so restless that you couldn't sit long in a chair; (9) felt as if nothing turned out the way you wanted it to; (10) felt somewhat apart or alone even among friends; (11) felt that personal worries were getting you down physically, that is, making you physically ill; and (12) felt that nothing was worthwhile anymore. For information supporting the reliability and validity of these items the reader is referred to Gove and Geerken (1977a) and Brocki and Gove (1978). For present purposes we would simply emphasize two points. First, unlike most instruments in surveys to measure mental health (e.g., the Langner [1962] scale, the HOS scale [McMillan, 1957] and the Gurin et al. [1960] scale), this scale does not contain items that can be interpreted as physical symptoms of organic disorders. Thus, if there is a relationship between this measure of mental health and physical health it cannot be attributed to overlapping items. Second, the relationship of scores on this measure of mental health and gender is not affected by response bias (Gove and Geerken, 1977a).

Dependent Variables

Most surveys, such as the National Health Survey, which have been used in the attempt to determine whether or not there are sex differences in physical illness, have attempted to measure a person's actual physical health and whether or not physical illness has functionally impaired his or her role performance (e.g., Nathanson, 1975; 1977; Verbrugge, 1976; 1977; Mechanic, 1976). In the present study we have indices of the respondents' general physical health and their role functioning. As the present study did not focus on physical illness, detailed information

on actual physical disorders was not obtained. Instead the respondents were asked this general question: Would you say that your overall health is (1) excellent; (2) good; (3) fair; or (4) poor? Reliance on such a general question as this has certain limitations, although it is obviously desirable to use an overall indicator of physical health. The study by Reynolds et al. (1974) indicates that responses to this general question are strongly related to a person's actual physical health as indicated by a detailed examination of indicators of physical illness. Furthermore, Singer et al. (1976:519) in their Midtown Manhattan Restudy found that a respondent's answer to this question was a strong predictor of the probability of dying in the next twenty years. The general nature of this question is in many respects a positive attribute for the purposes of this study. As the evidence in Sudman and Bradburn (1974) shows, general questions such as this tend to be particularly reactive to response bias. Furthermore, this question should be reactive to the presumed greater ability of women to adopt the sick role and hence define themselves in poor physical health. Thus by using this question we are weighing the results against our hypothesis and in favor of the counterhypothesis.

As an indication of the extent to which physical illness affected the respondent during the past two weeks, the respondents were asked the following question: (1) During the *past two weeks*, did you have to stay in bed either all or part of the day because you were not feeling well? and [if yes], how many days during the past two weeks (number of days)? (2) During the *past two weeks* (and not counting the days you stayed in bed) was there any time you were unable to do the things you *normally* do because you did not feel well? and [if yes] how many days during the *past two weeks* did this happen (number of days)? (3) In addition to what you have already told me, was there any time during the past two weeks when you did *not* feel well or when you noticed something was wrong with your health? and [if yes] how many days during the past few weeks did this happen (number of days)? In our analysis we have looked at (1) the occur-

rence of any illness (i.e., not feeling well), (2) the occurrence of functional impairment (i.e., not doing things), (3) spending any time in bed due to sickness; and (4) an index that combined indicators of the different types of impairment that were weighted for their severity and multiplied by the number of days of their occurrence. In our analysis of these different indicators, the results and the conclusions were virtually interchangeable. In our presentation we will use as our indicator whether or not during the past two weeks the respondents did not perform various activities because they were not feeling well. This indicator is very similar to some of the indicators used in the Health Interview Surveys. Like the indicator of general physical health, this measure also is potentially highly reactive to processes postulated by the two hypotheses which are the main alternatives to the one under investigation.

Control Variables

In our analysis we will be controlling for and looking at the comparative effects of the following demographic variables: (1) age, (2) family income, (3) respondents' education, and (4) race.⁴

Mode of Analysis

In many ways our analysis and presentation is extremely simple and straightforward, relying exclusively on percentages, means and the proportion (%) of total variance explained. Nevertheless, as our analysis utilizes the dummy variable regression program, Multiple Classification Analysis, developed by Andrews et al. (1969) and both relies on the clarification of a meaning of a measure of association presented in that program and develops a new measure of association, some interpretive comments are in order.

In essence, Multiple Classification

Analysis is a dummy variable regression analysis which presents mean scores for the various categories of an independent variable both before and after adjusting for the effects of a set of control variables. In the instance where the dependent variable is dichotomized, the mean is of course a percent. A very straightforward way of looking at the unadjusted and adjusted means is to view them as unstandardized and standardized rates. Thus, for example, in looking at health differences in men and women with and without adjusting (controlling) for age differences between the sexes, the unadjusted mean health scores would be those that actually occur in the sample or population, and adjusted means would be the differences between the sexes that would occur if the rates for men and women had been age standardized using the overall values of the whole sample or population. In our analysis we will be looking at the sex differences on our two indicators of health prior to controlling for the demographic variables noted above and after controlling for these variables; this analysis will thus indicate the degree to which sex differences can be accounted for by differences in our demographic controls. We will then look at the sex differences in health with and without adjusting (controlling) for the role variables and psychiatric symptoms. If our hypotheses are correct, then when men and women are in situations where they differ on an index of role characteristics and mental health, women should be in poorer physical health and, after adjusting for these characteristics (i.e., after standardizing the rates for men and women so that the sexes are "comparable" on their role and mental health characteristics), then the sex differences in physical health should disappear.

So far we have discussed the interpretation of the means and percentages to be presented. We will also be using PRE (Proportional Reduction in Error) measures of association (Costner, 1965) throughout the analysis. The MCA program presents Eta and Eta². Eta², of course, presents the proportion of the total variance in the dependent variable that is explained by the independent variable at

⁴ Age was categorized into six categories (18-25, 25-35, 35-45, 45-55, 55-65, and 65+), income into eight categories (less than \$2,000; \$2,000-\$3,999; \$4,000-\$5,999; \$6,000-\$7,999; \$8,000-\$11,999; \$12,000-\$19,999; \$20,000-\$29,999; \$30,000+), education into six (0-7, 8, 9-11, 12, 13-15, 16+), and race was categorized as white and nonwhite.

the zero-order level. Eta^2 is directly analogous to r^2 except that the independent variable is categoric and not linear. The MCA program also presents Beta and Beta^2 for the independent variables as an indicator of the strength of association after the mean scores have been adjusted. Although Andrews et al. (1969) present their Beta and Beta^2 as measures of association, they specifically note that they are unable to provide any clear interpretation of what the measure means. However, an analysis of how Beta^2 is computed shows that it is not only a PRE measure of association, but it is also directly analogous to Eta^2 , and that a comparison of Eta^2 and Beta^2 shows precisely the effect of introducing a set of control variables on an independent variable and a dependent variable.⁵ We will also be using an overall indicator of the total variance explained by our set of independent and control variables, which we will denote as $M\eta^2$ and refer to as multiple Eta^2 . $M\eta^2$ is produced by simply dividing the total explained sum of squares by the total sum of squares. This measure is directly analogous to multiple R^2 except for the fact that the set of independent and control variables are treated as categoric and not linear.⁶

THE DATA

The data associated with nurturant role attributes and psychiatric symptoms are

⁵ To use the example of sex differences in health before and after adjusting (controlling) for age, Eta^2 would be the percentage of the total variance in health that at the zero-order level can be attributed to sex differences, while Beta^2 would be the percentage of the total variance in health that can be attributed to sex differences after the rates of men and women have been age standardized. In this example, if $\text{Eta}^2 = .020$ and $\text{Beta}^2 = .020$, we know that gender accounts for 2% of the total variance in our indicator of health and that this difference between men and women cannot be accounted for by age differences between men and women. In contrast, if $\text{Eta}^2 = .020$ and $\text{Beta}^2 = .010$ then we know that at the zero-order level gender accounts for 2% of the variance in health, but that one-half of the difference between the sexes is due to their age difference and that only 1% of the total variance should actually be attributed to sex.

⁶ The reader should be aware that $M\eta^2$ is not the adjusted R^2 presented in the MCA program, and that the adjusted R^2 presented is not a PRE measure and that it has no clear substantive interpretation.

presented in Table 1. Looking first at all married respondents, we see that in every case women are higher on those attributes which we have postulated are associated with poor physical health, and that, in all cases except for getting enough sleep, the differences are statistically significant. The comparison of married men and women with and without children shows that the presence of children has much more of an impact on women than men, and that women with children fare considerably more poorly than comparable males. However, even among those without children, married women have higher rates of those attributes presumed to be associated with poor physical health. In short, a comparison of married men and women shows that, on the nurturant role attributes (which are presumed to be associated with poor physical health) and on our measure of psychiatric symptoms, married women have higher values than married men. Thus, according to our hypothesis, married women should be in poorer physical health, but this difference should largely disappear when we control for the respondent's nurturant role attributes and mental health.

As anticipated, males and females who live alone are virtually identical on their nurturant role attributes (with the one exception that women are more likely to be cared for when really sick) and mental health. Thus, we would predict at most minor sex differences in physical health among men and women who live alone, at least after demographic controls, and that any sex differences that did occur would be virtually unaffected by controlling for the respondents' role attributes and mental health.

Looking at all formerly married men and women living with others shows a pattern generally similar to that found with married men and women. On the first four indicators of nurturant role attributes married women and formerly married women are very similar, while in comparison formerly married women are less likely to have someone to take care of them when they are sick and they tend to be in poorer mental health. A comparison of formerly married men shows a similar pattern, although the rates are less stable due to the

Table 1. Role Attributes and Psychiatric Symptoms by Marital Status and Living Arrangement

	Married		Formerly Married, Living with Others				Never Married	
			Separated/Divorced		Widowed			
	Children	No Children	All	Living Alone*	Children	No Children	All	Living with Others
% Enough Sleep								
Male	21.4	16.1	18.4	17.3	50.0	10.5	8.3	24.1
Female	26.8	18.9	23.6	18.2	29.5	18.2	24.4	29.4
Eta ²	.011 ^a		.004 ^{ns}	.000 ^{ns}			.016 ^a	.003 ^{ns}
% Catch 'Bug'								
Male	15.6	18.5	17.2	—	0.0	16.7	11.8	18.8
Female	25.6	24.5	25.2	—	27.0	9.5	21.5	27.5
Eta ²	.009 ^a		.008 ^b	—			.006 ^{ns}	.011 ^{ns}
% Have Chores								
Male	29.2	25.9	27.4	37.4	50.0	36.8	27.8	25.8
Female	61.2	33.6	49.8	34.6	65.8	27.2	52.7	38.5
Eta ²	.097 ^c		.048 ^c	.000 ^{ns}			.027 ^b	.018 ^a
% Unable to Rest								
Male	16.2	14.0	15.0	18.5	50.0	5.3	11.1	19.2
Female	43.6	20.9	34.2	22.7	45.0	18.2	35.4	30.1
Eta ²	.084 ^c		.043 ^c	.003 ^{ns}			.029 ^b	.018 ^a
% Not Receive Care								
Male	3.3	2.6	2.9	53.6	0.0	15.8	13.9	10.8
Female	16.0	12.0	14.3	38.3	32.2	13.6	24.4	21.0
Eta ²	.035 ^c		.032 ^c	.022 ^b			.077 ^{ns}	.019 ^a
X Psychiatric Symptoms								
Male	5.49	4.74	5.07	6.49	10.50	6.74	6.06	6.91
Female	6.96	6.15	6.63	6.39	8.71	8.05	8.09	7.90
Eta ²	.038 ^c		.030 ^c	.000 ^{ns}			.020 ^a	.011 ^{ns}
Number								
Male	154	193	347	168	2	19	36	120
Female	369	259	628	269	149	22	254	143

* May be separated/divorced, widowed or never married.

^a <.05.^b <.01.^c <.001.

low number of men. There are only three formerly married men with young children, and so it is impossible to draw any firm conclusions about the effect of children on men in this situation. However, the fact that they have higher rates of psychiatric symptoms than any other males and fare poorly on a number of the role attribute items suggests that they find the care of children problematic. Children have a very marked effect on the role attributes and mental health of divorced women and a parallel but much more modest effect on widowed women. The more modest effect of children on widowed women may be due to their children generally being older than the ones living with divorced women. Following our hypothesis, these data would suggest that formerly married women living with others would be in poorer physical health than comparable formerly married men, but that this difference would largely disappear when we control for the respondents' nurturant role attributes and mental health.

The pattern with never married men and women who live with others is generally similar to the pattern with married men and women and formerly married men and women, although it is not quite as sharp on the role characteristics. This lack of sharpness on the role characteristics is consistent with the view that never married women, on the average, would not have assumed the degree of nurturant responsibilities associated with marriage and/or children. As before, these data lead to the prediction that never married women would be in somewhat poorer physical health than never married men, but that much of this difference would disappear when we control on the respondent's nurturant role attributes and mental health.

In our analysis we looked at the effect that controlling for the demographic characteristics of the respondent had on the relationships associated with the nurturant role attributes and psychiatric symptoms. For the nurturant role attributes it was obvious that controlling on the demographic characteristics has no effect on the rates. An analysis of psychiatric symptom scores of respondents who are mar-

ried or living alone shows that demographic controls also have no effect on the sex differences in the mental health scores. However, controlling for the demographic characteristics among formerly married and never married respondents who live with others produces a marked decline in the extent to which women have higher psychiatric symptom scores. It appears that most of the effect of the controls in these two cases can be attributed to the fact that women in these categories tend to live under much more trying socioeconomic circumstances, and that these circumstances play a substantial role in their high psychiatric symptoms scores.

Table 2 presents first the total variance in the dependent variables that is explained and second the percent of that variance that is uniquely explained by (1) the demographic controls and (2) the independent health variables, as well as (3) the percent of the total variance that is collinear with both the demographic and independent health variables. For the independent health variables the table also presents the percent of the total explained variance that is uniquely explained by (1) the role variables, (2) psychiatric symptoms as well as (3) the percent of explained variance that is collinear between the role variables and psychiatric symptoms. Table 3 shows that (for survey data) our independent and control variables are generally explaining a considerable proportion of the total variance in the dependent variables. With regard to the respondents' evaluation of their general physical health, among those who are married or living alone the demographic controls are more powerful than the independent health variables, although the effect of the independent health variables is very substantial. In contrast, among formerly married persons living with others and never married persons living with others, the independent health variables are more important than the demographic controls. Turning to functional impairment, one sees that in every case the independent health variables are more important than the demographic controls. In general the psychiatric symptom measure is a more powerful predictor than the role variables,

Table 2. Apportioning the Variance Explained in the Respondent's General Physical Health and Functional Impairment

	Married		Living Alone		All Formerly Married Living with Others		Never Married Living with Others	
	General Health	Functional Impairment	General Health	Functional Impairment	General Health	Functional Impairment	General Health	Functional Impairment
Total Variance Explained ($M\eta^2$)	23.6	8.2	41.6	18.5	31.8	25.6	29.6	22.1
A. % Variance Uniquely Explained								
1. By demographic variables	50.0	19.5	57.0	17.8	43.1	34.8	33.1	38.9
2. By independent health variables	41.5	68.3	35.1	54.1	52.5	66.8	56.4	54.3
2a. % uniquely by role variables	(10.2)	(30.5)	(5.5)	(5.4)	(9.4)	(7.0)	(4.7)	(15.4)
2b. % uniquely by psychiatric symptoms	(21.6)	(19.5)	(20.7)	(50.8)	(31.4)	(44.9)	(37.2)	(19.5)
2c. % collinear between role and psychiatric variables	(9.3)	(18.3)	(8.9)	(-2.2)	(11.6)	(14.8)	(14.5)	(19.5)
B. % Variance Collinear between Demographic and Independent Health Variables	8.5	12.2	7.9	28.1	4.4	1.6	10.5	6.8

and this is particularly true for persons living alone—who of course are in situations where there is very little variation in the nurturant role variables. The relative effect of the nurturant role variables is greatest among the married, the category of respondents where one anticipates the greatest nurturant demands. Overall, very little of the variance is collinear between the independent health variables and the demographic control variables. Taken as a whole, the data presented in Table 2 strongly suggest that both nurturant role characteristics and mental health play a significant role in the respondents' evaluation of their overall physical health and in the occurrence of functional impairment.

An analysis of the effect of the nurturant role attributes and psychiatric symptoms on the respondents' (1) general physical health and (2) functional impairment for our four categories of respondents shows that all of the relationships are in the predicted direction and almost all of the relationships are statistically signifi-

cant. An analysis of the role characteristics shows that not enough sleep and, particularly, an inability to get a good rest when sick are the variables most strongly related to poor physical health and functional impairment. This suggests that being physically run down, presumably because of performing one's role requirements, is a significant cause of poor physical health. The relationship between psychiatric symptoms and both general health and functional impairment is considerably stronger than that found with any of the role items. In part this is due to the greater number of categories in the psychiatric symptom scale. However, it is probably also due to the nature of the instrument. Both indicators of the respondent's physical health deal with the respondent's physical health at the present time. The measure of psychiatric symptoms also deals with the respondent's present mental state, and thus there is a direct correspondence in time with the measure of physical health and mental health. In

Table 3. Sex Differences in the Respondent's Evaluation of their General Physical Health: An Analysis of the Consequences of Controlling for the Effects of Demographic Variables, Nurturant Role Characteristics and Mental Health among Different Categories of Respondents

Controls	Health	Married		Living Alone		Formerly Married Living with Others		Never Married Living with Others	
		Male	Female	Male	Female	Male	Female	Male	Female
None:	Excellent	43.6	56.4	49.3	50.7	21.2	78.8	56.7	43.3
	Good	32.5	67.5	36.5	63.5	12.0	88.0	43.9	56.1
	Fair	31.4	68.6	29.5	70.5	7.4	92.6	27.0	73.0
	Poor	28.0	72.0	25.8	74.2	13.0	87.0	16.7	83.3
		Eta ² = .013 ^b		Eta ² = .030 ^b		Eta ² = .019 ^{na}		Eta ² = .046 ^b	
Demographic:	Excellent	43.4	56.6	43.9	56.1	19.2	80.8	53.3	46.7
	Good	32.7	67.3	37.7	62.3	13.0	87.0	44.5	55.5
	Fair	31.3	68.7	34.1	65.9	8.5	91.5	31.4	68.6
	Poor	27.5	72.5	31.9	68.1	7.8	92.2	32.3	67.7
		Beta ² = .012 ^b		Beta ² = .007 ^{na}		Beta ² = .013 ^{na}		Beta ² = .022 ^{na}	
Dem. and Role:	Excellent	40.1	59.9	43.3	56.7	17.4	82.6	51.2	48.8
	Good	33.1	66.9	37.8	62.2	13.0	87.0	45.6	54.4
	Fair	33.9	66.1	34.9	65.1	9.3	90.7	32.6	67.4
	Poor	39.2	60.8	31.6	68.4	9.3	90.7	36.8	63.2
		Beta ² = .004 ^{na}		Beta ² = .006 ^{na}		Beta ² = .007 ^{na}		Beta ² = .015 ^{na}	
Dem., MH:	Excellent	40.5	59.5	44.1	55.9	17.2	82.8	53.1	46.9
	Good	32.8	67.2	37.4	62.6	13.1	86.9	44.5	55.5
	Fair	34.2	65.8	34.2	65.8	8.7	91.3	31.4	68.6
	Poor	37.7	62.3	31.8	68.2	11.1	88.9	35.3	64.7
		Beta ² = .005 ^{na}		Beta ² = .008 ^{na}		Beta ² = .008 ^{na}		Beta ² = .021 ^{na}	
Dem., R., MH:	Excellent	38.9	61.1	43.2	56.8	15.9	84.1	51.8	48.2
	Good	33.2	66.8	37.6	62.4	13.0	87.0	45.5	54.5
	Fair	35.0	65.0	35.2	64.8	9.6	90.4	31.5	68.5
	Poor	43.9	56.1	32.0	68.0	11.3	88.7	36.8	63.2
		Beta ² = .003 ^{na}		Beta ² = .006 ^{na}		Beta ² = .004 ^{na}		Beta ² = .018 ^{na}	
% Each Sex:		35.6	64.4	38.6	61.4	12.5	87.5	45.6	54.4
Number of Respondents:									
	Excellent	296	30.5%	150	34.5%	52	18.0%	97	36.9%
	Good	458	47.2%	159	36.6	133	46.0%	123	46.8%
	Fair	191	19.7%	95	21.8%	81	28.0%	37	14.1%
	Poor	25	2.6%	31	7.1%	23	8.0%	6	2.3%
		970		435		289		263	

^a <.05.

^b <.01.

^c <.001.

contrast, four of the five variables dealing with the respondents' role attributes deal specifically with problems that arise when the respondent is already not feeling well. Thus, their major effect may be to exacerbate an illness once it develops and the items may be more peripherally related to the respondent's average physical health. It is thus possible that poor mental health might be more strongly associated with a person's average physical health, while the nurturant role attributes which we are measuring may primarily have a strong impact on a minor physical disorder once it arises and play a very substantial role in the development of such a disorder, for example, playing a key role in determining whether a physical disorder becomes so

serious that medical treatment is desirable.

Table 3 presents the respondents' overall evaluation of their physical health by sex, (a) without controls, and with controls for (b) demographic variables, (c) demographic variables and role characteristics, (d) demographic variables and mental health, and (e) demographic variables, role characteristics and mental health. With regard to our hypothesis, this is the key analysis for our indicator of the respondents' general physical health. First, let us look at the relationships for the married. The data show that there is a statistically significant relationship in the predicted direction between sex and physical health, and that this relationship is not

affected by demographic controls. When the respondent's nurturant role characteristics or the respondent's mental health is added to the demographic variables as a control, the sex differences are markedly reduced. A comparison of the sex differences in physical health, first with demographic controls and then with demographic controls combined with the respondent's role characteristics and mental health, shows not only (1) that the sex differences in physical health are no longer statistically significant, and that the explained variance attributed to sex has been reduced by 75%, but also (2) that the relationship is no longer monotonic, with men being more likely than average to be in both "excellent" and particularly "poor" physical health, while women have relatively high rates of "good" and "fair" physical health. These data thus fit perfectly with our hypothesis that sex differences in physical health are due to sex differences in nurturant role demands and mental health. It is particularly important to note that the study by Gove and Geerken (1977b), which uses this same data, is able to show fairly convincingly that poorer mental health among married women is due to the characteristics of their role. In short, it appears that the higher rates of poor mental health among married women, which partially account for their higher rates of poor physical health, can in turn be attributed to the characteristics of their role.

Among respondents living alone, on the average, women are in poorer physical health. However, after demographic controls this relationship diminishes sharply and no longer even approaches statistical significance. Furthermore, adding controls for the role variables and/or mental health has no effect on the sex differences in physical health. These results are what would be predicted by our hypothesis. Nevertheless, we would note that in all comparisons after controls women do tend to be in slightly poorer physical health, which suggests that among these respondents there may be some small residual determinant of sex differences in physical health which has not been captured by our controls.

Among formerly married respondents

living with others, the sex differences in physical health are not statistically significant. Nevertheless, before and after demographic controls women do tend to be in poorer physical health than men and, as measured by Beta², this sex difference is as strong as that found among married men and women. The prime reason that the relationship between married men and women is statistically significant, while among the formerly married it is not, is due to the much smaller number of cases of formerly married. As occurred with the married, adding either role attributes or mental health to the demographic variables as controls discernibly reduces the sex differences in physical health with demographic controls. When both the respondents' role characteristics and mental health are added to the demographic variables or controls, the data show that sex, as a predictor of physical health, becomes a trivial variable (see the Betas), and that the relationship of sex to physical health is no longer even monotonic. In short, these data also fit our hypothesis.

Never married women living with others tend to be in poorer physical health than comparable men, and this relationship is statistically significant. However, after the demographic characteristics of the respondent are controlled for, this relationship is reduced to statistical insignificance. Nevertheless, the *n* is relatively small, women do still tend to be in poorer physical health and, as indicated by the Beta², the strength of this relationship is not trivial. Controlling for the role characteristics of the respondent as well as the demographic variables discernibly reduces the sex differences in physical health and the relationship is clearly no longer monotonic. Nevertheless, overall these women do still tend to be in poorer physical health than their male counterparts. Among these respondents the effect of mental health on sex differences in physical health is slight. These data could be interpreted in a variety of ways, depending upon one's inclinations. One interpretation is that after demographic controls there are no sex differences in physical health. Another is that after demographic controls there are some differences in physical health, and these are discernibly

who live alone report, they also report slightly more functional impairment.

Among the formerly married respondents who live with others there are no statistically significant sex differences in functional impairment either with or without controls. Nevertheless, women in this category report more functional impairment than men do, and this relationship remains after demographic controls. However, if in addition to the demographic variables one also controls for either nurturant role characteristics or mental health, the functional impairment of men surpasses that of women. Furthermore, if one controls for both nurturant role characteristics and mental health, the proportion of men who are functionally impaired surpasses that of women by 6.9%. In summary, these data are also consistent with our hypothesis.

None of the relationships with never married respondents who live alone are statistically significant. However, it is again the case that women in this category report higher rates of functional impairment than men. Demographic controls reduce the extent to which women report higher rates of functional impairment, but after such controls the rate for women is still slightly higher than that for men. Controlling for the effects of either nurturant role characteristics or mental health on the reports of functional impairment shows they both have modest effects. And in fact, when both are controlled for simultaneously, the rate of functional impairment of men very slightly surpasses that of women. Thus, like the rest of the data on functional impairment, these data also support our hypothesis.

CONCLUSION

From the literature on sex differences in morbidity and mortality it is clear that the higher rates of morbidity among women as compared with men are due to higher rates of relatively mild forms of physical illness. We have hypothesized that the sex differences in such rates are largely due to the nurturant role demands confronting women, which prevent them from taking good care of themselves, and their rela-

tively poor mental health which, based on the literature, also was assumed to be largely associated with the women's role. Following from this analysis, it was postulated that men and women who live alone would be in relatively similar physical health. We looked at two different indicators of physical illness, the respondents' overall evaluation of their physical health and the occurrence of a functional impairment in the past two weeks across the following categories of respondents: the married, persons living alone, the formerly married living with others, and the never married living with others. In our analysis we looked at the effects of nurturant role demands and mental health on sex differences on physical illness. In seven of the eight comparisons the results provided strong support for our hypothesis. In the remaining comparison, the respondents' evaluation of their general health among those who were never married and living with others, the results are probably best viewed as equivocal, neither clearly supporting nor contradicting our hypothesis. We take the overall results as indicating that the sex differences in physical health largely reflect real differences in physical health, and that this difference can be primarily attributed to women confronting more nurturant role demands and generally being in poorer mental health.

A hypothesis that was not a focus of the present study is that sex differences in physical health can be partially attributed to sex differences on demographic variables which are related to characteristics of their life experiences. As we have seen with the measures of the respondents' general health, most of the sex differences among respondents who live alone and, to a somewhat lesser extent, among never married respondents living with others can be attributed to sex differences on the demographic variables. To a much lesser extent this is also true with regard to sex differences in functional impairment among never married respondents living with others. These differences appear to be largely due to socioeconomic differences, particularly income. Women on their own simply do not fare as well, on the average, in the economic market. These results

demonstrate the importance of looking at the effects of demographic characteristics when investigating the determinants of sex differences in physical health.

In the introductory section of the paper we discussed two alternative explanations of the higher rates of physical illness among women, namely, (1) that women are more willing to articulate and take action on mild forms of physical illness, and (2) because of their lack of role demands, women can more readily adopt the sick role. In our analysis we found no evidence for the latter hypothesis and, in fact, it appears that it is an excess of role demands that partially accounts for why women have higher rates of physical illness. The evidence with regard to the first hypothesis is less clear. Among respondents living alone, women with and without controls appear to have slightly poorer physical health and slightly more functional impairment, and never married women who live alone also appear to be in slightly poorer physical health after controls. These results could be interpreted as indicating that some of the apparent higher rates of physical illness among women are partially due to their greater willingness to articulate and act upon their symptoms. While we find this is a plausible interpretation of the data, we are inclined to think it is not the correct interpretation. First, after controls, formerly married men who live with others have higher rates of functional impairment than comparable women and, to a much lesser extent, the same pattern holds among never married respondents who live with others. These data thus run directly counter to the alternative hypothesis. Second, this same explanation has been posed as an explanation of why women appear to have higher rates of mental illness, and it has been fairly convincingly demonstrated in the area of mental illness that this is not a tenable explanation (e.g., Clancy and Gove, 1974; Gove et al., 1976; Gove and Geerken, 1977a; Gove, 1978).

From all the research on sex differences in physical health it is clear that the higher rates of women are found almost exclusively among the mild forms of physical illness. The data presented in this paper

suggest that the higher rates of women among mild forms of physical illness are largely real. Although, as noted above, there are certain limitations with the data in this study, overall we feel the evidence for this conclusion is quite compelling although replication is clearly desirable. This conclusion runs directly counter to assertions made by Verbrugge (1976; 1977) and Mechanic (1976), but these were assertions lacking any clear empirical support. It is our belief that these assertions are based on the recognition that (1) women do complain more than men about physical problems, and (2) the belief that this is due to it being normatively more appropriate for women to do so. Our analysis suggests that the basis for the complaints is largely real. Assuming that we are correct, this does not necessarily mean that the stigmatization for men and women for verbalizing physical complaints is equal. It is possible that the high rates of illness among women lead to high rates of complaining and this high rate of complaining in turn leads to the social acceptance of the fact that it is more "normal" for women to complain than men. According to this reasoning, the social acceptance of women complaining is not a major cause of their complaining. Instead, the recognition that women complain about their physical problems more than men is an adaptation to the fact that women have more to complain about.

The reader should be aware that although we find virtually no effects of interview behavior or sick role behavior there is nothing in our analysis that suggests such effects do not exist. There is, of course, considerable evidence that such effects do exist. What our analysis suggests is that these effects are unrelated to the sex of the respondent and thus in our analysis these effects show up as random noise. This pattern precisely parallels the pattern found with mental health where there are strong respondent/interviewer relationships to scores on mental health scales, but these relationships are unrelated to sex and thus they do not affect the comparison of men and women on measures of mental health (Clancy and Gove, 1974; Gove et al., 1976; Gove and Geerken, 1977a).

REFERENCES

- Andrews, F. M., T. N. Morgan and J. A. Sonquist
1969 "Multiple classification analysis." Institute for Social Research, University of Michigan, Ann Arbor.
- Barker, P.
1953 *Adjustment to Physical Handicap and Illness*. New York: McGraw-Hill.
- Booth, Alan
1976 *Urban Crowding and Its Consequences*. New York: Praeger.
- Brocki, Severine and Walter Gove
1978 "Sex roles, marital roles and mental health: an analysis of data from a national survey." Mimeo.
- Campbell, A., P. Converse, and W. Rogers
1976 *The Quality of American Life: Perceptions, Evolutions and Satisfaction*. New York: Sage.
- Chesler, Phyllis
1972 *Women and Madness*. New York: Avon.
- Clancy, Kevin and Walter Gove
1974 "Sex differences in respondents' reports of psychiatric symptoms: an analysis of response bias." *American Journal of Sociology* 78:205-44.
- Cole, P.
1974 "Morbidity in the United States." Pp. 65-104 in C. L. Erhardt and J. E. Berlin (eds.), *Morbidity and Mortality in the United States*. Cambridge, Ma.: Harvard University Press.
- Conrad, Frederick
1962 "Sex roles as factors in longevity." *Sociology and Social Research* 46:195-202.
- Costner, Herbert
1965 "Criteria for measures of association." *American Sociological Review* 30:341-53.
- Dodge, David and Walter Martin
1970 *Social Stress and Chronic Illness: Mortality Patterns in Industrial Society*. Notre Dame: University of Notre Dame Press.
- Dohrenwend, Bruce and Barbara Dohrenwend
1974 "Social and cultural influence on psychopathology." *Annual Review of Psychology* 25:417-59.
- 1976 "Sex differences in psychiatric disorders." *American Journal of Sociology* 81:1447-59.
- 1977 "Reply to Gove and Tudor's comment on 'sex differences in psychiatric disorders'." *American Journal of Sociology* 82:1336-45.
- Dunnell, K. and H. Cartwright
1927 *Medicine-Takers, Prescribers and Hoarders*. London: Routledge and Kegan Paul.
- Engle, George L.
1977 "The need for a new medical model: a challenge for biomedicine." *Science* 196:129-96.
- Enrenreich, B. and D. English
1973 "Complaints and disorders; the sexual politics of sickness." *Glass Mountain Pamphlet No. 2*. Old Westbury: Feminist Press.
- Gove, Walter R.
1972 "Sex roles, marital roles and mental illness." *Social Forces* 51:34-44.
- 1973 "Sex, marital status and mortality." *American Journal of Sociology* 79:45-67.
- 1976 "Deviant behavior, social intervention and labelling theory." Pp. 219-27 in Lewis Coser and Otto Larsen (eds.), *The Uses of Controversy in Sociology*. New York: Free Press.
- 1978 "Sex differences in mental illness among adult men and women: an examination of four questions raised regarding whether or not women actually have higher rates." *Social Science and Medicine*. In press.
- Gove, Walter and Michael Geerken
1977a "Response bias in surveys of mental health: an empirical investigation." *American Journal of Sociology* 82:1289-317.
- 1977b "The effect of children and employment on the mental health of married men and women." *Social Forces* 56:66-76.
- Gove, Walter, Michael Hughes and Omer Galle
1979 "Overcrowding in the home: an empirical investigation of some of its possible pathological consequences." *American Sociological Review* 44:59-80.
- Gove, Walter, James McCorkel, Terry Fain and Michael Hughes
1976 "Response bias in community surveys of mental health: systematic bias or random noise?" *Social Science and Medicine* 10:497-502.
- Gove, Walter and Jeanette Tudor
1973 "Adult sex roles and mental illness." *American Journal of Sociology* 77:812-35.
- Gurin, Gerald, Joseph Veroff and Sheila Feld
1960 *Americans View Their Mental Health*. New York: Basic Books.
- Hinkle, Lawrence, Ruth Redmont, Norman Plummer and Harold Wolff
1960 "An examination of the relation between symptoms, disability and serious illness in two homogeneous groups of men and women." *American Journal of Public Health* 50:1327-36.
- Ilfeld, F.
1976 "Further validation of a psychiatric symptom index in a normal population." *Psychological Reports* 3:1215-28.
- Johnson, Allan
1977 "Sex differentials in coronary heart disease: the explanatory role of primary risk factors." *Journal of Health and Social Behavior* 18:46-54.
- Langner, T.
1962 "A twenty-two item screening score of psychiatric symptoms indicating impairment." *Journal of Health and Human Behavior* 3:269-76.
- Lelanne, K. Jean and R. John Lelanne
1973 "Alleged psychogenic disorders in women—a possible manifestation of sexual prejudice." *The New England Journal of Medicine* 288:288-92.
- Little, Craig
1976 "Some social psychological correlates of illness symptom complaining." Paper presented at the annual meeting of the

- American Sociological Association, San Francisco.
- McMillan, A.
1957 "The Health Opinion Survey technique for estimating prevalence of psychoneurotic and related types of disorders in communities." Monograph supplement 7. Psychological Report 3:325-39.
- Madigan, F. C.
1957 "Are sex differences biologically caused?" Milbank Memorial Fund Quarterly 21:202-55.
- Markush, Robert E., John J. Schwab, Patricia Faris, Paula Present and Charles Holzer
1977 "Mortality and community mental health: the Alchua County, Florida mortality study." Archives of General Psychiatry 34:1393-1401.
- Mechanic, David
1965 "Perception of parental response to illness." Journal of Health and Social Behavior 6:253-7.
1976 "Sex, illness, illness behavior, and the use of health services." Journal of Human Stress 2:29-40.
- Mechanic, David and Margaret Newton
1965 "Some problems on the analysis of morbidity data." Journal of Chronic Disease 18:569-80.
- Moriyama, I. M., D. E. Krueger and J. Stamler
1971 Cardiovascular Disease in the United States. Cambridge, Ma.: Harvard University Press.
- Moss, Gordon
1973 Illness, Immunity and Social Interaction: The Dynamics of Biosocial Resonance. New York: Wiley.
- Nathanson, Constance
1975 "Illness and the feminine role: a theoretical review." Social Science and Medicine 9:57-62.
1977 "Sex, illness and medical care: a review of data, theory and method." Social Science and Medicine 11:13-25.
- Pearlin, L.
1975 "Sex roles and depression." Proceedings of the Fourth Life-Span Developmental Psychology Conference: Normative Life Crises: 191-207.
- Phillips, Derek and Kevin Clancy
1970 "Response bias in field studies of mental illness." American Sociological Review 35:503-15.
1972 "Some effects of 'social desirability' in survey studies." American Journal of Sociology 77:921-40.
- Phillips, Derek and Bernard Segal
1969 "Sexual status and psychiatric symptoms." American Sociological Review 34:58-72.
- Preston, Samuel
1970 "An international comparison of excessive adult mortality." Population Studies 24:5-20.
- Radloff, L.
1975 "Sex differences in depression: the effects of occupation and marital status." Sex Roles 1:249-65.
- Renne, Karen
1971 "Health and marital experience in an urban population." Journal of Marriage and the Family 32:338-48.
- Retherford, Robert
1972 "Tobacco smoking and the sex mortality differential." Demography 9:203-16.
1975 The Changing Sex Differential in Mortality. Westport: Greenwood.
- Reynolds, W. Jeff, William Rushing, and David Miles
1974 "The validation of a functional status index." Journal of Health and Social Behavior 15:271-88.
- Russek, Henry
1959 "Role of heredity, diet, and emotional stress in coronary heart disease." Journal of the American Medical Association 171:503-8.
1964 Tobacco consumption and emotional stress in the etiology of coronary disease." Geriatrics 19:425-33.
- Scheff, Thomas
1975 "Reply to Chauncey and Gove." American Sociological Review 40:252-7.
- Singer, Eleanor, Robin Garfinkel, Steven Cohen and Leo Srole
1976 "Mortality and mental health: evidence from the Midtown Manhattan Restudy." Social Science and Medicine 10:517-25.
- Sudman, S. and N. Bradburn
1974 Response Effects in Surveys. Chicago: Aldine.
- Szalai, Alexander (ed.)
1972 The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries. The Hague: Morton.
1975 "Women's time: women in light of contemporary time-budget research." Future:385-99.
- Thurlow, John
1967 "General susceptibility to illness: a selective review." Canadian Medical Association Journal 57:840-7.
- Verbrugge, Lois
1976 "Females and illness: recent trends in sex differences in the United States." Journal of Health and Social Behavior 17:387-403.
1977 "Sex differences in morbidity and mortality in the United States." Social Biology 23:275-96.
- Waldron, Ingrid
1976 "Why do women live longer than men?" Journal of Human Stress 2:2-13.

DECISION MAKING AND NON-DECISION MAKING IN CITIES: SOME IMPLICATIONS FOR COMMUNITY STRUCTURAL RESEARCH*

RICHARD A. SMITH

Florida State University

American Sociological Review 1979, Vol. 44 (February):147-161

The literature relating community structural characteristics to policy outputs generally has failed to account for communities not considering an issue as a third type of outcome beyond rejection and adoption. It is argued that nonconsidering communities are likely to be very different from both nonadopters which have considered a policy and have subsequently decided to reject it and from those adopting a particular policy. These types should be separated in research on community structure and community outputs. The current research distinguishes between these three outcome types for fluoridation programs and relates these distinctions to the three important community structural characteristics of structural differentiation, community integration and the centralization of authority within municipal governments. The results of the analysis support the hypotheses, showing that both affinities and disaffinities exist between the communities classified by the three-part outcome typology. Rejecters and adopters are shown to be similar in terms of levels of structural differentiation, and can be distinguished from the less differentiated, nonconsidering communities. Conversely, both nonconsiderers and adopters tend to be more highly integrated and exhibit a greater centralization of authority than rejecters.

INTRODUCTION

The study of the relationships between community structural characteristics and policy outcomes has tended to concentrate on a relatively simple conceptualization of outcome states. Communities are usually classified as having adopted or not adopted a particular policy, with the attempt then being made to relate these actions to important structural characteristics of communities that are hypothesized to affect the probability of these outcomes. Common variations to this adopt vs. nonadopt dichotomy have included the use of variables measuring the extent of adoption (as in level of funding or monies spent) or the speed of adoption (as with the amount of time passed from a given point of program availability to adoption). These variations, however, maintain the common two-part distinction between adopting and nonadopting communities.

We can question whether this simple nominal formulation of outcome states or the more complex variations adequately represent the total set of outcomes that a

community may display on any given issue or policy. One potentially important omission has been the recognition of communities that have never publicly considered an issue or policy. Communities falling into this third category clearly have taken a different action (or nonaction) from those communities having considered an issue and subsequently having decided to reject or adopt it. By employing only the adopt vs. nonadopt distinction, current research efforts, invariably have included this third type of community in the category of those rejecting a policy, thus confusing two potentially different types.

If a reasonable basis exists for assuming that the community structural characteristics associated with nonconsideration vs. rejection of a policy are the same, then treating the two types as one will result only in a loss of theoretical specificity, with no differences in empirical outcomes. It can be argued, however, that the structural characteristics likely to be associated with nonconsideration vs. rejection, and indeed, between the three types of outcomes—nonconsideration, rejection and adoption—are likely to be different and that the failure to distinguish between the three types has affected both

* Address all communications to: Richard A. Smith; Department of Urban and Regional Planning; Florida State University; Tallahassee, FL 32306.

theoretical development and empirical results.

The research reported in this paper addresses this problem by attempting to distinguish between the three different outcomes states and to show the differential relationship of important community structural characteristics to each type. Briefly anticipating the arguments and results, the research shows that on a number of important community structural characteristics there exist significant similarities between communities never having considered a particular policy (fluoridation) and those having adopted it, and that these two types can be distinguished from communities having rejected the policy. On other bases, both rejecters and adopters are similar and can be distinguished from nonconsiderers.

BACKGROUND

Indications of differences between communities classified as never having considered a policy, having rejected or adopted it, are suggested in the literature dealing with the adoption of new programs and innovations by formal organizations. It has been argued by Wilson (1966) and others (Utterback, 1971; Rowe and Boise, 1974; also see Moch and Morse, 1977) that various organizational characteristics may differentially affect the various phases of the innovation process, with this process conceptualized in at least three stages: generating new ideas, proposing new ideas and adopting these ideas. Organizations in which there is an increased capacity to generate many new ideas and programs and to propose them for official consideration, also may be less likely to adopt many of these same proposals. This occurs, according to Wilson, because the organizational characteristics affecting a higher level of idea generation and proposal (complexity of the task and incentive systems) may adversely affect the ability of organization executives to exercise the degree of influence necessary for adopting and implementing these proposals. Complex task structures, involving highly specialized, differentiated and nonroutine tasks, and frequently involving a decentralized task and administrative

structure, contribute to the differentiation of value and reward systems within the organization. In so doing, they reduce the relative value of incentives available for distribution by executives. Hence, a diminution of control over members' activities and task performance and a greater difficulty in instituting new procedures and innovations at the organizational level may result. Conversely, executives in organizations with less complex task and incentive systems may be in a better position to understand, adopt and implement new programs, but the probability that a diversity of new ideas will be generated and proposed is diminished somewhat due to the effects of a relative homogeneity of tasks, organizational expertise and experience, and incentive systems.

Wilson's argument for stages in the innovation process and different organizational characteristics affecting levels of activity at each stage parallels our argument for considering a greater range of community postures and different community characteristics affecting these postures. Communities classified as nonconsiderers may suffer from the failure of new issues and demands being generated and proposed within the community. While at the organizational level this may be attributed to less complex task systems and a less diverse set of values, with fewer alternative reward systems, the analogous structural characteristics at the community level, and variously argued within the literature as affecting outputs, are structural differentiation and community social integration.

Similarly, communities classified as having considered but not adopting a policy may suffer not from a paucity of new ideas being generated and proposed, but from a lower ability to agree on, adopt and implement these proposals. These latter inabilities may be related to the political structure of communities, and in particular, the extent to which decision-making authority is centralized within that structure, as well as to the social integration of the community. Last, communities adopting new proposals may fare well on all accounts. They may have both the capacities for generating new ideas and the abilities to adopt these ideas when

they are perceived as appropriate responses to community problems. In what follows these potential differences between communities are explored and developed into a set of specific hypotheses for testing.

Community Structure and Outputs

1. *Structural differentiation.* The importance of structural differentiation in affecting policy outputs has been noted by Clark (1968a; 1968b; 1973b), Aiken and Alford (1970a; 1970b), Zisk (1972), Hawkins et al. (1975) and others. The essence of this argument is that as communities grow and develop a more extensive division of labor in a number of sectors, comprising a greater number of more complex tasks and specialized organizations and personnel, there emerges new interests, problems and perceptions of issues that are raised for resolution through the political system and a greater degree of expertise for handling novel problems and generating solutions. Thus, in one sense, there exists an expanded and more heterogeneous demand structure in more highly differentiated communities. Moreover, in these communities, the specialized groups and organizations that develop in different issue/problem areas become professionalized, maintain extensive communication networks with extra community organizations and professionals, and are better able to perceive and analyze community problems and suggest potential solutions to them. Hence, the higher level of outputs observed in these communities may be due, *ceteris paribus*, to both the diversity and quality of ideas and proposals that are generated.

This suggests that communities never having considered a particular issue or policy may be distinguished from both adopters and nonadopters by the extent to which the community has developed a number of differentiated, specialized organizations and institutions in a diversity of community sectors.

2. *Community social integration.* The second condition of community social integration and its relationship to outputs has been considered by Coleman (1957), Pinard (1963), and others (Danielson,

1976). Social integration is treated in terms of individual attachment to the community, involving a consensus of values and norms and an extensive and interlocking communications network between community members, organizations and leaders. Coleman's argument relates levels of integration to the potential for controlling the development of community conflict and the debilitating consequences of these conflicts for community decision making and issue resolution (also see Minar, 1966). Thus, where integration is high, the ability of the community to respond to problems and resolve issues is enhanced.

Presumably, the opposite is also likely; i.e., that when perceived needs do not exist and the community is in agreement that a particular condition does not constitute a problem or one that is the responsibility of government to handle, then the more highly integrated community can facilitate nonaction. This is essentially Pinard's hypothesis: that more highly integrated communities are more likely to support their leader's policies, are more likely to take stronger stands for or against a policy, and are more likely to approve or disapprove of policies with greater unanimity than less well-integrated communities.

Following this reasoning, we can argue that higher levels of integration, in addition to directly affecting the likelihood of the adoption of particular policies, are also likely to affect directly their nonconsideration. More highly integrated communities are more likely to agree on a particular position, and where a latent or manifest consensus in favor of a particular policy exists, that policy is more likely to be brought up on the public agenda and approved. Conversely, this same consensus, either on the irrelevance of a particular issue or the inappropriateness of a given policy, will serve to keep it from emerging for public consideration and debate. As such, integration may work in both ways—to enhance the probabilities of adoption or the likelihood of an issue not being considered. Thus, communities classified as nonconsiderers or adopters may be similar and may be distinguished from less well-integrated communities

where consideration and rejection of a policy may be more likely.

3. *Centralization of authority.* The relationship between political structure and outputs has been discussed extensively within the literature. Much of this discussion has focused on the potential "good government" bias of reformed systems and a hypothesized higher level of outputs of progressive, innovative policies in these systems. However, little support exists for this argument. Alternatively, it has been argued that the different political systems—reformed and unreformed—may differ in outputs because of the differences in the ways in which the two types distribute authority. Indeed, the very rationale for the reformed system is given as a means of decentralizing the authority and influence inherent in the partisan, mayor-council system. Thus, reformed structures, while potentially centralizing some administrative authority in the city manager, also may limit the influence of a strong executive, and the formal governmental structure in general, through the mechanisms of nonpartisan elections, and citizen input through the use of referenda, recall, initiative and a greater use of citizen "watchdog" committees (Banfield and Wilson, 1963).

Evidence bearing on the relationship between the differences in centralized authority structures and community outputs comes from Rosenthal and Crain (1968), Crain et al. (1969), Crain (1968), Kirby et al. (1973) (also see Greenstone and Peterson, 1968; Banfield and Wilson, 1963; Moch and Morse, 1977). Rosenthal and Crain's argument is directly to our point, with differences in fluoridation outcomes explained by the degree of executive centralization and participativeness of the system. Partisan, mayor-council systems, it is argued, represent both strong executive centralization and low levels of participation through the use of referenda, and are associated with the highest rate of fluoridation adoptions.

It is not clear, however, that centralized authority is a necessary condition for the adoption of all types of policies and, secondly, that centralized authority need be exercised only for the purposes of adoption. Wilson's argument specifically re-

lates to innovations affecting the entire organization; innovations that bear only on subunits may fare better in a decentralized system (also see Moch and Morse, 1977). This argument is supported by the types of programs (fluoridation and school desegregation) found to be related to centralized authority structures. These programs relate to the entire community rather than to particular community groups and represent those types of programs characterized by Froman (1967) as areal (as opposed to segmental, which are directed to particular groups) and Clark (1973a) as public goods (vs. separable). The hypothesis also parallels the argument given by Smith (1976) and Clark (1973a) concerning the variable relationship between outputs and community power when considering program type (also see Kaluzny, 1974; Zisk, 1972; Lincoln, 1976; Turk, 1970).

Secondly, it is reasonable to argue that centralized authority also may work to keep particular issues from surfacing within a community. Where fewer actors are in control of the official agenda, issues deemed to be untimely, inappropriate or irrelevant by whatever criteria may be more effectively kept from public discussion than in less centralized systems. This suppression of issues is much more difficult in a system of decentralized authority and greater opportunities for public participation since numerous access points to government will exist and their use will be encouraged (Rosenthal and Crain, 1968). In terms of the problem at hand, this reasoning suggests that at least for areal (or public goods) programs, both nonconsiderers and adopters may be distinguished from nonadopters by the degree to which the structure of government involves a centralization of authority.¹

In summary, the main points of our

¹ The relationship between the suppression of issues and community power is discussed by Bachrach and Baratz (1963) and Crenson (1971). Since we do not have the data necessary to test this relationship, the argument is not included in the text. However, given the theoretical literature on this subject a parallel hypothesis concerning the relative concentration of community power in nonconsiderers and adopters appears to be a reasonable one and warrants testing at a later date.

argument can be restated in terms of the following three hypotheses:

1. The greater the level of structural differentiation of communities, the greater the likelihood that they will have considered a particular policy and have taken some action on it, either to reject or adopt. Conversely, the lower the level of structural differentiation, the greater the probability that communities will have never considered a policy.

2. The greater the level of social integration of communities, the greater the likelihood that they will have never considered a particular policy or will have considered and adopted it. Conversely, the lower the level of integration, the greater the probability of having considered the policy and rejected it.

3. The greater the centralization of authority in a community political structure, the greater the likelihood that they will have never considered a particular (areal) policy or will have considered and adopted it. Conversely, the lower the centralization of authority, the greater the probability that the policy will have been considered and rejected.

The following analysis represents a test of these three hypotheses.

METHODOLOGY

Because of its clearly areal nature, the relative ease with which consideration vs. nonconsideration could be determined and the local importance of the issue, water fluoridation was chosen as the particular program by which to test the hypotheses. Much of the data on the three independent concepts of differentiation, integration and the structure of local governments were available from a previous study on 50 communities in New York State. These communities represent the total set of cities of over 10,000 population in 1960 that are located outside of the New York metropolitan area. Data on public activities regarding fluoridation were collected from a number of sources: public documents identifying communities that had adopted fluoridation (New York State Department of Health, 1971), data collected by Simmel (1961) from local newspaper reports on whether the fluoridation

issue was ever publicly discussed within a community, and new data collected by questionnaires sent to the mayor and editor of the local newspaper of each community included in the study. This questionnaire asked each informant whether the community had responsibility for its water supply, whether it had ever publicly considered the fluoridation issue, when, and if so, whether any official action was taken on it. From these four data sources relatively complete and unambiguous data were pieced together for 47 of the 50 communities up through 1965. The analysis is thus based on these 47 communities, distinguished on the basis of never having publicly considered the policy (type I), having considered and rejected it (type II), and having adopted it (type III) up through 1965. The number of communities of each type is 7, 15, and 25 respectively.²

A number of independent variables were selected to measure the three aspects of community structure, as follows:³

1. Structural differentiation, defined as the degree of complexity of community organization and indicated by the extent to which a community had developed differentiated and specialized sets of local institutions, organizations and functions, was measured as follows:

(a) *Guttman scale of commercial services.* The type and range of business and commercial services within a community may be measured on a presence/absence basis in order to indicate both the extensiveness of development of specialties in this sector as well as an indicator of the general differentiation and complexity of the community. Accordingly, a scale of commercial services was created from data on the existence of 25 selected types of business and commercial services originally suggested by Lee (1969) and reported in the Dun and Bradstreet Reference Book (1960). These services range from a fairly "low-order" (such as gas

² Two communities that had adopted and subsequently terminated the program prior to 1965 are included in type III.

³ Data sources for the independent variables, unless noted otherwise, include the 1960 Census of Population and the Municipal Yearbook (International City Managers' Association, 1960-1962).

stations and drug stores) to "higher-order" services (new syndicates, TV broadcasting, specialized business loans) that are likely to be available only in larger, more differentiated communities. Only 12 of the original 25 items were needed to construct the scale, yielding a coefficient of reproducibility of .93 (Guttman, 1947) and a coefficient of scalability of .65 (Menzel, 1953). The resulting scale appears to be intuitively reasonable, with higher scale steps representing the more specialized services found in larger communities (the zero-order correlation between scale score and community population size = .50).

(b) *Closure*. The Guttman scale accounts only for the presence or absence of each specialty within a community, with no account taken of the sufficiency of the level of services that are provided for the population. The concept of closure is intended to account more fully for the level of service by measuring the degree to which these service levels are adequate for the local population. The concept and the particular form of measurement have been developed by Feldt (1965) and are based on the use of location quotients for a selected group of ten local service industries such as food, education, medical services, etc. The index varies about 1.0, with an index below this level reflecting a deficiency in these services within the city's borders. The use of this measurement is based upon the reasoning that more highly differentiated communities are more likely to provide a range of basic goods and services necessary for local consumption. Less developed communities, on the other hand, are likely to be more dependent upon outside sources for the provision of local needs.

(c) *Municipal employees*. Turk (1971) has used the size and functions of municipal bureaucracies as a measure of the integrative and control potentials of the municipal organization over the community units. Following Liebert's (1974) argument, we reason that larger municipal bureaucracies are likely to incorporate a wider range of specialized roles and functions, and therefore are a measure of community differentiation. Municipal employees are measured per 1,000 population.

(d) *City planning employees*. An even more direct measure of differentiation of the municipal bureaucracy and the specialized expertise within it may be the size of particular municipal agencies such as those charged with specialized community development activities. These agencies are likely to be less routine and more professional than a number of other book-keeping or administrative units, and thus more adequately reflect the concept of differentiated, specialized activities and expertise. The number of employees in separate and specialized municipal planning agencies (per 10,000 population) was chosen to reflect the extent to which community development expertise has been incorporated within the community system.⁴

(e) *Occupational structure*. Since particular types of occupations are more likely to be involved in more specialized, complex and nonroutine functions than others, the relative distribution of community occupational roles may be used to reflect community differentiation. This variable is measured as the percentage of the population classified as managers, proprietors or officials and professional, technical and kindred workers.

Three additional variables are included which more directly measure the social heterogeneity of the population than structural differentiation of the community system. These are a gini index of income dissimilarity, the percentage foreign born and the percentage nonwhite. While they do not necessarily capture the degree of specialized knowledge and expertness that form part of our rationale regarding the effects of structural differentiation on proposal generation, these variables do relate to that part of our argument concerned with the diversity of demands that result from a more heterogeneous system.

2. Community social integration, taken to mean the extent to which members are attached to a social system through subscription to a common set of norms and

⁴ Following Liebert's (1974) critique, the use of this variable is dependent on all communities in the study having some formal responsibility in a functional area requiring this expertise. In the present study this requirement is satisfied.

values and participation in a common set of institutions, is measured as follows:

(a) *Index of voting consensus.* This measure is meant to tap the extent to which members of the community agree on particular issues, as a reflection of a consensus on values represented by these issues. It is constructed on the basis of the voting outcomes of thirteen issues presented to the voters between 1958 and 1960. These included proposed changes in state law, state constitutional amendments, gubernatorial elections and political party registration. For each issue, the higher of the two outcome percentages (yes, no; Democrat, Republican) was selected as a measure of consensus on that particular issue and the mean percentage across the thirteen issues was computed as the measure of general community consensus. While imperfect, in that the measure does not account for voter turnout and the relative importance of the particular issues to the community and its members, the measure does appear to be a reasonable alternative to original study and data collection on values and consensus within each community and has much greater depth than measures based solely on one issue, such as presidential voting (cf. Aiken and Alford, 1970a). Voting data were collected from local election boards.

(b) *Moral integration.* Angell's (1951) index of moral integration represents one of the few attempts to directly measure integration in terms of "the degree to which the life of the group proceeds in terms of shared ends and values" (1974: 609). It is computed as a weighted index of crime (from the Uniform Crime Reports) and United Fund contributions (from state and local U.F. organizations) as given in the original (Angell, 1951) formulation, thus representing a further test of the utility of this index beyond Angell's (1974) replication.

(c) *Migration.* The rationale for including a migration variable follows from Pinard's (1963) argument that communities undergoing large population change through migration are likely to be less well-integrated, migration having the effect of disrupting existing social networks (also see Aiken and Alford, 1970a). Given the availability of census data, only

in-migration is measured, taken as the percentage of the 1960 residents living in a different county in 1955.

(d) *Unemployment.* Pinard also argues that high rates of unemployment are likely to impact negatively on community integration since the unemployed tend to isolate themselves and unemployment produces a widespread atmosphere of political apathy and detachment. Unemployment rates are measured for the civilian labor force, 1960.

(e) *Voluntary organizations.* Following Coleman's argument on the integrative effects of community voluntary organizations, a Guttman scale of voluntary organizations was created which reflects the extent of organizational density within the community. The scale consists of nine steps selected from an original list of 25 organizations, with a coefficient of reproducibility = .95 (Guttman, 1947) and a coefficient of scalability = .70 (Menzel, 1953). Examples of organizations included in the scale, in ascending order, are the American Legion, League of Women Voters, American Civil Liberties Union and Congress of Racial Equality (also see Harp and Gagen, 1971). Data were collected from the Chamber of Commerce in each community.

3. Government structure, and the extent to which authority is concentrated within this structure, is measured by five variables, as follows:⁵

(a) *Type of elections.* This is measured as partisan or nonpartisan. Partisan elections, while potentially allowing for more access to local government through the party organization, are taken as reflecting

⁵ Type of government, whether mayor council or manager council, was not included as a variable since there does not appear to be any clear basis for arguing which type involves a greater centralization of authority. While substantial authority for administrative matters may be vested in the manager, policy-making authority on important issues is generally lacking. Similarly, as Rosenthal and Crain's (1968) data indicate, manager cities are more likely to hold referenda and this tendency may be interpreted as an indicator of less centralized authority. Regarding mayoral cities, the distinction between partisan and nonpartisan elections appears to be important, with nonpartisan mayors being relatively weak. Thus, mayor form by itself may not involve more or less centralized authority than manager forms; the critical distinction may turn on type of elections.

a relative concentration of authority. This follows the arguments of Rosenthal and Crain (1968; Crain et al., 1969) concerning the insulating qualities of the party on the mayor and the tendency they find for non-partisan systems to decentralize authority and increase citizen participation through the use of referenda. Support for this interpretation also comes from Greenstone and Peterson (1968).

(b) *Term of mayor.* Also following the reasoning of Rosenthal and Crain (1968), mayors with four-year terms are likely to exercise more authority than those with two-year terms.

(c) *At-large councilmen.* While all reformed structures generally have been regarded as decentralizing authority, it can be argued that each of the reformed characteristics may not have the same effects on distributing authority. Specifically, a greater percentage of councilmen elected at-large may represent a greater concentration of authority in government. Where councilmen are elected at-large there exists lower direct representation and access to government of particular interest groups and areas of the community (traditionally lower income groups and minority areas), and the formulation of a relatively small, elite group who are more independent of any particular set of interests for their election than are ward councilmen. Taking at-large councilmen to reflect a concentration of authority, this variable is measured as the percentage of all councilmen elected at-large.

(d) *Other elected officials.* Other city officials, such as the auditor, clerk, attorney or superintendant of public works, may be directly elected or appointed to office. We reason that authority is likely to be more centralized where these other officials are appointed.

(e) *Composite score.* Since cities vary in the extent to which they incorporate the above four mechanisms of centralization, it is reasonable to argue that those incorporating a greater number of them are likely to be characterized by a greater centralization of authority than those with fewer such mechanisms. Thus, cities with partisan elections, long terms for mayors, a high percentage of at-large councilmen and appointed other municipal officials lie

at one end of a continuum of centralization, with the weak end defined by cities with the opposite set of characteristics. Accordingly, a composite score was created by the simple addition of the number of centralizing mechanisms present in a city, empirically ranging from 1-4.

Each of the independent variables is measured for 1960. In contrast, 68% of those communities adopting fluoridation did so between the years of 1955-65, making it reasonable to measure the independent variables at the midpoint of the decade in which most fluoridation actions were taken.

ANALYSIS AND RESULTS

The analysis was conducted in two parts. In the first, a series of mean comparisons and t-test (frequencies and chi-square in the case of nominal variables) were made for each independent variable taken separately and then with the introduction of controls for each other variable included in the analysis. Because this procedure does not allow for the comparison of all variables taken together, and the study of the relative importance of each, a series of discriminant analyses were undertaken in part two. The latter analysis generally confirms the first and provides the additional information on how well each variable, in conjunction with all others, differentiates between the three outcome types.

The results of the first part of the analysis are shown in Tables 1-3. While it would have been ideal to undertake a three-way comparison of the means or frequencies, the relatively small number of communities used in the analysis and their further subdivision by the control variables argued for certain aggregations. Accordingly, since the hypotheses recognize certain affinities among the different outcome types—integration and centralization of authority should be greater in types I and III compared with II; differentiation should be greater in types II and III compared with I—communities in outcome types I and III were combined when considering the integration and authority variables, and those of types II and III

Table 1. Means of Differentiation Variables by Type of Community

Variable	Type I (7)	Type II, III (40)	p*
Commercial services	8.0	10.1	.03
Closure	.69	.79	.02
Municipal employees	13.4	12.1	.29
City planning employees	.01	.15	.003
Occupation	7.0	7.9	.05
Income dissimilarity	3.9	7.8	.03
Foreign born	7.2	8.2	.09
Nonwhite	2.7	3.3	.35

* One-tailed probability.

were combined when considering the differentiation variables. Control variables are divided at the median unless otherwise noted.⁶

The results of this first part of the analysis provide reasonably strong support for the hypotheses. Reviewing the differentiation variables, Table 1 shows that without controls mean levels of the commercial services, closure, city planning employees, occupational structure and income dissimilarity variables are higher for the type II and III communities and that these differences are significant at $p \leq .05$. Type II and III communities also have more heterogeneity in terms of percentage nonwhite and foreign born and only in the case of the municipal employees variable is the direction of the relationship as hypothesized not maintained. When controls for all other differentiation, integration and government structure variables are instituted⁷ many of these relationships are attenuated, but a relatively large percentage continue to exist in the hypothesized direction (100% of the relationships involving commercial services, closure, city planning employees, occupational structure and income dissimilarity are maintained in the hypothesized direc-

⁶ Since the literature shows that the use of referenda bears a relationship to the probability of adopting fluoridation, it would have been valuable to have added an additional control for method of decision making. Unfortunately, too few of the communities included in the study had used referenda. Of the three employing this method, two had adopted and one had rejected the program.

⁷ Because of the large volume of statistics produced when instituting all controls and the resulting size of the tables needed to reproduce these results, they are not reported here. Copies of these tables are available from the author upon request.

Table 2. Means of Integration Variables by Type of Community

Variable	Type I, III (32)	Type II (15)	p*
Voting	61.5	56.5	.04
Moral integration	6.4	6.9	.13
Migration	10.3	12.8	.06
Unemployment	8.8	9.7	.42
Voluntary organization	4.9	4.7	.33

* One-tailed probability.

tion of which 58% are significant at $p \leq .05$ and 80% at $p \leq .10$).

Results are less strong for the integration variables (Table 2). Without controls mean levels of the voting, unemployment and voluntary organization variables are higher for types I and III than II, and migration is higher for type II, as hypothesized. The differences are significant at $p \leq .05$ only for the voting variable; mean differences are just above this level of significance for the migration variable.⁸ Considering only these two variables, when controls are applied the mean differences are maintained in the hypothesized direction in 91% of the relationships. Of these, 20% are significant at $p \leq .05$ and 47% significant at $p \leq .10$.

Of the government structure variables (Table 3), both the percentage of councilmen elected at-large and the composite score of centralization are shown to be as hypothesized and significant at $p \leq .05$. With controls, all of the mean differences for the councilmen variable are in the hypothesized direction, 50% of which are significant at $p \leq .05$ and 69% at $p \leq .10$. The strength of the composite score distinguishing among outcome types is particularly revealing: apparently, most of the individual mechanisms considered separately are insufficient in themselves to influence outcomes. However, an interaction effect appears to occur so that when taken in conjunction with one another, significant results are obtained. Thus, the results tend to confirm the findings of Rosenthal and Crain (1968) regard-

⁸ The failure of the moral integration index to distinguish between types may be more of a reflection of the validity of this index than of the hypothesis. Potential reasons for the failure of this index are given by Angell (1974).



Table 3. Mean of Percent Councilmen Elected At-Large and Frequencies of Other Government Structure Variables by Type of Community

Variable	Type I, III Type II		Q	p*
	(32)	(15)		
Councilmen at-large	45.1	15.7	—	.009
Mayor's term				
2 yrs	19	11	—	.23
4 yrs	13	4		
Type elections				
partisan	28	12	.27	.41
nonpartisan	4	3		
Other elected				
none	17	6	.26	.30
one or more	15	9		
Composite score				
1	5	8	—	.006
2	11	5		
≥3	16	2		

* One-tailed probability.

ing the relationship between government structure and fluoridation at a more general, rather than detailed, level.

The second test of these relationships, involving the introduction of all variables into the analysis (the composite score of government structure was substituted for all other government structure variables) was undertaken through the use of a step-wise discriminant analysis and is reported in Table 4.⁹ Variables not making a significant ($p = .05$) contribution to the discriminant equation were successively eliminated so as to produce a discriminant equation whose chi-square probability was $p \leq .05$. Discriminant coefficients are reported in standardized form and may be interpreted as analogous to standardized regression coefficients, with the sign of the coefficient, in conjunction with the sign of the group centroid (representing the position of the type in two-dimensional space) indicating the direction of the effect. Hence, large positive (negative) coefficients increase the probability of a case being a member of a group with a positive (negative) centroid.

Considering the three outcome types separately, three discriminant analyses

⁹ In no instance were the variables correlated with each other at greater than $r = \pm .42$, with most considerably below this, thereby avoiding severe problems of multicollinearity in the discriminant analyses.

Table 4. Discriminant Analyses

Comparisons	Variables										p
	comm. services	closure	c.p. emp.	income diss.	occ.	voting	mig.	score	Group centroids	Canonical correlation	Wilder lambda
1. I vs. II		-1.02		-.64		+.55	-1.03	+.14	I=1.32 II=-.62	.69	.53
2. II vs. III	-.42			-.29		+.72	-.04	+1.03	II=-.76 III=.45	.52	.73
3. I vs. III	-.05	-.93	-.30	-.81		+.19	-.39	+.04	I=1.61 III=-.45	.66	.56
4. I vs. II, III	-.30	-.93		-.60	-.14	+.47	-.68	+.07	I=1.6 II, III=-.28	.56	.68
5. II vs. I, III	-.24	-.18		-.36		+.69	-.27	+.82	II=-.85 I, III=.39	.51	.74

were produced involving each possible pair of types. Our hypotheses suggest that the comparison between types I and II should be the strongest of the comparisons with distinctions occurring on the basis of each of the three structural concepts. Equation 1 of Table 4 shows that the primary bases for distinction between types I and II are, in descending order of importance, migration, closure, income dissimilarity, voting, and the score of centralized authority. Given the negative centroid of type II, we can see that, as hypothesized, the probability of a particular community being a member of this type is increased by higher levels of closure and income dissimilarity (i.e., higher differentiation), higher levels of migration and lower voting consensus (i.e., lower integration) and a lower level of centralization of authority. Conversely, the probabilities of membership in type I are increased by lower levels on the differentiation variables, higher levels of voting consensus and lower migration, and a greater centralization of authority.

Our hypotheses suggest that the differences between types II and III should occur mainly on the basis of the integration and authority variables. Equation 2 shows that the centralized authority and voting variables are the most important in distinguishing between the two types, with further distinctions occurring on the basis of commercial services, income dissimilarity and migration. The probability of membership in type III vs. II is increased by a greater centralization of authority, higher voting consensus and lower migration (integration), and lower levels of commercial services and income dissimilarity (differentiation). While our hypotheses do not suggest that differentiation should be lower in type III than in type II cities, there is no reason to suggest that they should not be slightly dissimilar in this regard. In any event, the effect of the differentiation variables is not substantial; λ is reduced to .77 by the authority and voting variables alone and further reduced by only .04 with the inclusion of the differentiation variables. Clearly, however, given the size of λ and the canonical correlation, the

types may be distinguished further on the basis of variables not included in this analysis.

Of the third comparison involving types I and III, our hypotheses suggest that the primary basis for distinction should be on the differentiation variables. Equation 3 shows that closure and income dissimilarity are the most important, followed by migration, city planning employees, voting, commercial services and centralization of authority. The probability of a community's membership in type I vs. III is increased by lower levels of differentiation, and higher levels of integration and centralization of authority. The inclusion of the migration and authority variables in this equation indicates that types I and III cities, while markedly different from type II, still are not equal in these regards. Of the three types of cities, those never having considered the fluoridation issue are likely to be characterized by the lowest levels of differentiation, the highest levels of integration and the most centralized authority. The correspondence of these three characteristics in type I cities is consistent with our notions of urban development and sociostructural change (Warren, 1963).

If a number of the outcome types are combined, as in the first part of the analysis, then two further (and partially redundant) comparisons can be made. Equation 4, when viewed in conjunction with equation 2 may be seen as a two-stage analysis in which we first consider the differences between considerers and nonconsiderers (equation 4) and then, of the considering group, view the differences between rejecters and adopters. Thus, as equation 4 shows, communities having considered the fluoridation issue are likely to be higher in differentiation (commercial services, closure, income dissimilarity and occupation), lower in integration (lower voting consensus and greater migration) and involve less centralization of authority. Between considering communities however, rejecters are likely to be higher in differentiation and lower in integration and centralization of authority. Equation 5 shows the analysis when types I and III are combined vs. II.

Here the primary distinctions on the basis of the integration and authority variables are maintained.

CONCLUSIONS

The above analysis provides fairly strong support for the three hypotheses. While the analysis was performed on a small sample of communities and therefore may be regarded as only preliminary and promising, the strength of the results and, importantly, the logic of the argument for expanding the consideration of outcome types, suggests a substantial degree of conclusiveness and strength to the implications.

We do not conclude, however, that the three particular structural concepts or the variables measuring them fully explain community policy outputs. While important, a good deal of discriminating ability remains for other variables in each of the discriminant analyses. This argues for better measures of the concepts (particularly community social integration), the inclusion of more variables reflecting these concepts, and the incorporation of still other community structural characteristics in the analysis.

Furthermore, it should be reiterated that the hypotheses and the analysis relate to only one type of program, conceived of here in areal/public goods terms (i.e., those affecting the entire community). Whether or not these results will hold when other areal/public goods programs are used remains to be seen. Similarly, the areal-segmental and public-separable goods distinctions do not exhaust the bases upon which issues and policies can be typed (see, e.g., Salisbury, 1968; Froman, 1968; Lowi, 1964). The clear existence of other dimensions for categorizing policies and their employment in conjunction with one another, may argue for some changes and refinements to the three hypotheses.

We believe that the first hypothesis, relating levels of structural differentiation to outcome types via the reasoning involving diverse demands and expanded expertise is a reasonable one that also may hold when considering other types of pro-

grams. This merely is an extension of research results reported in the literature and the relationship should become even stronger in other studies once the two disparate types of communities usually included in the nonadopt category are distinguished. Our interpretation of current research also suggests that higher levels of social integration may not be a prerequisite for the adoption of programs affecting only particular community groups (i.e., segmental programs) as long as a community maintains that minimum degree of coordination and conflict resolution abilities necessary for maintaining the decision-making system. When segmental programs are involved, it is not necessary that all parties agree on the necessity or desirability of the program and the political trade-offs and compromises that characterize community politics are likely to aid the adoption of segmental, more so than areal, programs. As such, for these other types of programs the distinctions between nonconsiderers, rejecters and adopters may not materialize.

Another question involves the use of centralized authority in actively suppressing or otherwise having the effect of keeping issues from reaching the point of public consideration. We are not certain whether the suppression of areal programs or the suppression of segmental programs may require greater centralization of authority and we can develop hypotheses along each line of reasoning. This, too, remains for further testing.

One conceptual difficulty that also remains is the definition of the nonconsidering category. Throughout we have defined this group as composed of communities in which the fluoridation issue was never raised for public discussion. Our reasoning and hypotheses, however, suggest that this may occur for two reasons: because the issue was never raised at all (either through nonconcern or consensus); or because the issue was either actively or passively suppressed. This suggests that our third outcome category is also a heterogeneous one and that a further refinement of the research should attempt to distinguish between these two subtypes. Given our hypotheses, it is logical to as-

sume that differences between communities of each subtype would exist. Clearly, however, the difficulties in attempting to account for these two subtypes of nonconsiderers are large; how do we readily get at information on cases of active or passive suppression that would be suitable for cross-community research?

Even without making this distinction, questions can be raised about the problems of determining consideration vs. nonconsideration. As noted, the choice of fluoridation in this research partially rested on the relative ease with which nonconsideration could be identified. Given the volatile nature of the issue, it is unlikely that consideration would have gone unnoticed. However, problems still exist. While we relied on newspaper editors and mayors as informants, and have no more than the normal reasons to doubt the validity of their responses and the strengths of their memories, it seems likely that had we surveyed other informants (such as local dentists who may have had more than a passing interest in fluoridation, have discussed it among themselves and have different perceptions of the issue), we may have received different responses.

This also raises the question of when does a particular issue become a community issue; i.e., at what point do we determine that an issue has been considered by a community? The dentists may perceive fluoridation as a community issue while others do not. In other instances the difficulty of deciding if and when a community considered a particular issue may arise because the program "grew" on the community and was adopted incrementally and incorporated into the public delivery system. Many programs are first started by citizen's groups and other non-public organizations at a relatively small scale. Over time these organizations may seek financial help from the municipal treasury for maintaining or expanding the program until, at some point, local government takes over the program, either officially or *de facto*. Thus, the point in time at which the program was considered by the community may be an indeterminate one.

The clearest implication of the research

is the need to more fully account for *at least* three outcome types in future studies. Clearly, however, the implication is not a universal one since for many types of programs the attempt to account for nonconsiderers may be irrelevant or of no practical importance. Where policies are imposed by outside agents, as with court-ordered busing, the notion of when a community considered a policy is irrelevant. Similarly, questions of need and functional responsibility for program areas must be taken into account. Many communities may not consider a program simply because the need for it does not occur (e.g., pollution control in a nonindustrial, rural area) or because the municipality does not have decision-making and service delivery responsibilities. Also, we find it difficult to conceive of many major communities that have not at least considered many of the federally subsidized community programs that have existed for many years and have become standard fare, such as urban renewal and public housing. In these instances, accounting for nonconsiderers may be of no practical significance. Still, beyond these instances a sufficient number of others exist to warrant the consideration of the nonaction community when studying community outputs.

REFERENCES

- Aiken, Michael and Robert Alford
 - 1970a "Community structure and innovation: the case of urban renewal." *American Sociological Review* 35:650-65.
 - 1970b "Community structure and innovation: the case of public housing." *American Political Science Review* 64:843-64.
- Angell, Robert C.
 - 1951 "The moral integration of American communities." *American Journal of Sociology* 52:1-140.
 - 1974 "The moral integration of American cities, II." *American Journal of Sociology* 80:607-29.
- Bachrach, Peter and Morton S. Baratz
 - 1963 "Decisions and non-decisions: an analytical framework." *American Political Science Review* 57:632-42.
- Banfield, Edward C. and James Q. Wilson
 - 1963 *City Politics*. New York: Vintage.
- Clark, Terry N.
 - 1968a *Community Structure and Decision Making*. San Francisco: Chandler.

- 1968b "Community structure, decision making, budget expenditures and urban renewal in 51 American communities." *American Sociological Review* 33:576-93.
- 1973a *Community Power and Policy Outputs: A Review of Urban Research*. Beverly Hills: Sage.
- 1973b "Citizen's values, power and policy outputs." *Journal of Comparative Administration* 4:385-428.
- Coleman, James
1957 *Community Conflict*. New York: Free Press.
- Crain, Robert L.
1968 *The Politics of School Desegregation: Comparative Case Studies of Community Structure and Policy Making*. Chicago: Aldine.
- Crain, Robert L., Elihu Katz and Donald B. Rosenthal
1969 *The Politics of Community Conflict*. New York: Bobbs-Merrill.
- Crenson, Matthew A.
1971 *The Un-Politics of Air Pollution: A Study of Non-Decision-Making in the Cities*. Baltimore: Johns Hopkins Press.
- Danielson, Michael N.
1976 *The Politics of Exclusion*. New York: Columbia University Press.
- Dun and Bradstreet, Inc.
1960 *Reference Book*. Book 2, Vol. 426. New York: Dun and Bradstreet.
- Feldt, Allan G.
1965 "The metropolitan area concept: an evaluation of the 1950 SMAs." *Journal of the American Statistical Association* 60:617-36.
- Froman, Lewis A.
1967 "An analysis of public policies in cities." *Journal of Politics* 29:94-109.
1968 "The categorization of policy contents." Pp. 112-23 in Austin Ranney (ed.), *Political Science and Public Policy*. Chicago: Markham.
- Greenstone, David J. and Paul E. Peterson
1968 "Reformers, machines and the war on poverty." Pp. 267-92 in J. Q. Wilson (ed.), *City Politics and Public Policy*. New York: Wiley.
- Guttman, Louis
1947 "The Cornell technique for scale and intensity analysis." *Educational and Psychological Measurement* 7:247-79.
- Hawkins, Brett W., Terry Kocourek, Donald Stacey and Richard A. Swiller
1975 "A macro-analysis of the effects of planning agency professionalism on municipal planning outputs." *Journal of the American Institute of Planners* 41:419-24.
- Harp, John and Richard Gagen
1971 "Scaling formal voluntary organizations as an element of community structure." *Social Forces* 49:477-82.
- International City Managers Association
1961- *The Municipal Yearbook*. Chicago: International City Managers Association.
1962
- Kaluzny, Arnold D., James E. Veney and John T. Gentry
1974 "Innovation of health services: a comparative study of hospitals and health departments." *Milbank Memorial Fund Quarterly* 52:51-82.
- Kirby, David J., T. Harris, R. Crain and C. Rossell
1973 *Political Strategies in Northern School Desegregation*. Lexington: Heath.
- Lee, Douglas B., Jr.
1969 "A technique for measuring differentiation." Mimeo. Department of Rural Sociology, Cornell University, Ithaca.
- Liebert, Roland
1974 "Municipal functions, structure and expenditures: a reanalysis of recent research." *Social Science Quarterly* 54:765-83.
- Lincoln, James R.
1976 "Power mobilization in the urban community." *American Sociological Review* 41:1-15.
- Lowi, Theodore
1964 "American business, public policy, case studies and political theory." *World Politics* 16:677-715.
- Menzel, Herbert
1953 "A new coefficient for scalogram analysis." *Public Opinion Quarterly* 17:268-80.
- Minar, David W.
1966 "The community basis of conflict in school system politics." *American Sociological Review* 31:822-35.
- Moch, Michael K. and Edward V. Morse
1977 "Size, centralization and organizational adoption of innovations." *American Sociological Review* 42:716-25.
- New York State Department of Health
1971 *Fluoridation Census*. Albany: Department of Health.
- Pinard, Maurice
1963 "Structural attachments and political support in urban politics: the case of fluoridation referendums." *American Journal of Sociology* 68:513-26.
- Rosenthal, Donald B. and Robert L. Crain
1968 "Structure and values in local political systems: the case of fluoridation decisions." Pp. 217-42 in J. Q. Wilson (ed.), *City Politics and Public Policy*. New York: Wiley.
- Rowe, Lloyd A. and William B. Boise
1974 "Organizational innovation: current research and evolving concepts." *Public Administration Review* 34:284-93.
- Salisbury, Robert H.
1968 "The analysis of public policy: a search for theories and roles." Pp. 155-75 in Austin Ranney (ed.), *Political Science and Public Policy*. Chicago: Markham.
- Simmel, Arnold
1961 "A sign post for research on fluoridation conflicts." *Journal of Social Issues* 17:26-36.
- Smith, Richard A.
1976 "Community power and decision making: a replication and extension of Hawley." *American Sociological Review* 41:691-705.

- Turk, Herman
 1970 "Interorganizational networks in urban society: initial perspectives and comparative research." *American Sociological Review* 35:1-19.
 1971 "The occurrence of new inter-organizational events in urban communities." Paper presented at the annual meeting of the American Sociological Association, Denver.
- U.S. Bureau of the Census
 1960 *Census of Population*. Washington, D.C.: U.S. Government Printing Office.
- Utterback, James M.
 1971 "The process of technological innovation within the firm." *Academy of Management Journal* 14:75-88.
- Warren, Roland
 1963 *The Community in America*. Chicago: Rand McNally.
- Wilson, James Q.
 1966 "Innovation in organizations: notes toward a theory." Pp. 193-218 in James D. Thompson (ed.), *Approaches Toward Organizational Design*. Pittsburgh: University of Pittsburgh Press.
- Zisk, Betty H.
 1972 "Local interest politics and municipal outputs." Pp. 231-54 in Harlan Hahn (ed.), *People and Politics in Urban Society*. Beverly Hills: Sage.

COMMENTS

THE GHOST DANCE AND THE POLICY OF LAND ALLOTMENT*

(COMMENT ON CARROLL, ASR JUNE, 1975)

Carroll (1975) uses the case of the Ghost Dance to test quantitatively hypotheses derived from various theories on the rise and acceptance of revitalization movements. His analysis suggests two prerequisites, either of which is sufficient, for acceptance of the Ghost Dance: recent deprivation and the absence of unilineal kin groups. Acknowledging the methodological advantages of Carroll's choice of the Ghost Dance for study, I suggest an alternative theoretical framework for interpreting the acceptance and rejection of social movements. The assumption underlying my criticisms is not that a deprivation argument is incorrect, but rather that in being applicable to nearly all situations of directed culture contact, deprivation does not particularly reveal how and when mobilization into a social movement takes place. Nor does it allow for much depth in the analysis of the effects of government policy on the rise and spread of movements.

RESPONSE TO CARROLL

The arguments presented by Carroll can be countered in terms of the classification of tribes into high and low acceptors of movements, and in terms of the theoretical frameworks within which acceptance and rejection of social movements can be examined.

In testing his hypotheses, Carroll uses a sample of 37 societies, dichotomized on the basis of high and low acceptance of the Ghost Dance. However, a number of the tribes listed by Carroll in the low acceptance category were in 1889 already involved in other revitalization movements, a factor Carroll should have taken into account. The Commanche and the Mesquero had both adopted the Peyote cult by this time (Slotkin, 1975:36; see also Mooney, 1965:159). Similarly, the Nez Perce partici-

pated in the Smoholla cult (Mooney, 1965:49; Josephy, 1965:434), a natavistic movement similar to the Ghost Dance religion. At this time the Hopi as well were organized in both passive and active resistance (James, 1974:108-22; Josephy, 1968:165). In addition, the basis for Carroll's placement of the Jicarilla Apache in either category is quite tenuous (Brown, 1976). It is improbable that the Jicarilla even knew of the Ghost Dance. Their agent reported they had no such knowledge. Moreover, any information the Jicarilla may have received on the Ghost Dance would have come from the Southern Ute, who were not followers of the doctrine (Mooney, 1965:49).

The Table presented in the Appendix of this paper takes into account the correction mentioned above. Furthermore, Carroll's categorization has been revised on the basis of high and low acceptance of any revitalization movement during the years of the Ghost Dance. Seven tribes remain in the low acceptance category: Fox, Kickapoo, Navaho, Omaha, Santee Sioux, Southern Ute, and Winnebago. This reorganization renders the correlations between revitalization movements and social structure and/or cultural deprivation found by Carroll less useful, as his tests consider only the Ghost Dance and not revitalization movements in general. The recategorization reduces the relationship for deprivation from $\phi = .335$ to $\phi = .241$.¹

While Carroll's arguments have been challenged on grounds of the classification of tribes, other data can be presented and analyzed to test the theoretical frameworks Carroll employs. The implications of this test for a competing theory of social movements can then be examined.

THEORETICAL FRAMEWORKS

In interpreting the high acceptance of the Ghost Dance by some tribes that had knowledge of it and the low acceptance by others, Carroll utilizes two prevailing theories of social movements. Drawing on the work of Aberle (1970), Barber (1941), and Wallace (1956), he constructs a hypothesis to test the role of rela-

* Address all communications to: Gail Landsman; 2828 St. Paul St.; Baltimore, MD 21218.

I wish to thank John D. McCarthy for his valuable advice throughout the course of this work. His time, enthusiasm, and encouragement were all much appreciated. I also wish to thank the staff of the Rights Protection Office of the Bureau of Indian Affairs for providing dates of allotment of various Indian lands, and the reviewers and editors of the *American Sociological Review* for their useful comments.

¹ Phi is used here rather than Q which is used by Carroll since it is more appropriate. This can be seen since the relationship between deprivation and acceptance of the Ghost Dance is 1.00 using Q, and the relationship presented in Table 2 by Carroll is obviously not perfect.

tive deprivation. In addition, he formulates a hypothesis to test the correlation between acceptance of revitalization movements and a society's level of integration in its Durkheimian sense, i.e., the degree to which an individual feels a sense of solidarity with some social group (Carroll, 1975:397). Here Carroll subscribes to the mass society theory of social movements. Two propositions follow from the mass society theory. The first is that extremist social movements are most likely to flourish in societies in which few people participate in associations. Secondly, it is the alienated and atomized individuals who make up the ranks of such movements (Oberschall, 1973:103).

In explaining the unequal levels of acceptance of the movement, Carroll thus supports a theory based on degrees of integration; he suggests that acceptance of a revitalization movement is a response to a lack of cohesion within the groups that compose the society. This integration argument can be tested by examining the effects of the allotment of land in severalty, a legislative policy designed to destroy the tribal cohesion of American Indian societies.

THE LAND ALLOTMENT POLICY

The policy of allotment of Indian lands in severalty took form in the 1870s (Otis, 1973:3). Pressure for passage of a General Allotment Act came from white settlers and lumber, railroad and mining interests who hoped to gain access to surplus Indian lands on the one hand, and "philanthropists" who hoped to instill the notion of private property and thereby civilize the Indians, on the other. What little acceptance of the policy there was on the part of Indian groups came as an attempt to protect their land holdings. It was hoped that an individually-held strip of land, guaranteed by a patent from the government, would provide greater security than tribal possession. Such was the concern of the Omaha who petitioned for allotment of lands in severalty in 1882 (Otis, 1973:13-4).

The General Allotment, or Dawes Act, as passed in 1887 provided for each family head to be allotted 160 acres of land, with lesser amounts allotted to other individuals. The allotments were to be held in trust by the United States Government for twenty-five years in order to protect the lands from land-greedy speculators. The choice of allotment was to be made within four years after allotment was applied to the reservation, with failure to choose a parcel of land resulting in selection on the order of the Secretary of the Interior. Citizenship was to be conferred upon

allottees and on all other Indians who had abandoned their tribes. Lands "left over" after individual allotments had been assigned were to be opened up to white settlement.

The goal of the legislation's promoters was to do away with tribalism, with communal ownership of land, with the concentration of the Indians on reservations, with the segregation of the Indians from association with good white citizens, with Indian cultural patterns, with native languages, with Indian religious rites and practices. . . . (Prucha, 1973:7).

Senator Dawes, an ardent proponent of allotment whose name became attached to the legislation of 1887, explained that the idea of allotment

is to take Indians out one by one from under the tribe, place him in a position to become an independent American citizen, and then before the tribe is aware of it its existence as a tribe is gone. (quoted in Priest, 1969:246-7)

Figures on the transfer of land ownership from Indians to whites bear witness to the effect of the Dawes Act (Otis, 1973). Of the 155,632,312 acres of Indian lands in 1881, there were 104,314,349 acres left in 1890, and 77,865,373 acres in 1900 (Otis, 1973:87). The lands held by Indians thus were cut nearly in half as a result of the allotment act.

Allotments on the Santee Sioux reservation preceded the Dawes Act by two years, and at that location 42,160 were opened to white settlement (Meyer, 1967:182). By 1909 two-thirds of their land retained in separate allotments had passed out of Indian ownership (McNickle, 1973:84).

In 1890 the agent of the Omahas and Winnebago estimated that 60% of Winnebago land belonged to women, old or infirm men, and minor children, none of whom could cultivate it (Prucha, 1976:258). While the Omaha and Winnebago had been the great hope of allotment enthusiasts, most of the evidence from the 1890s and later "piece together a picture of a demoralized people" (Otis, 1973:131). The passage in 1891 of a law allowing for leasing of Indian allotments removed even more land from Indian hands, and further opened the reservations to white settlers.

In general the literature on the effects of allotment of land in severalty reveals

how allotments opened up reservations, led to the extinguishment of title to "surplus" tracts and created, through homesteading, a mixed Indian country. . . . The thrust and conclusions of most studies suggest . . . that allotment was failing and that contrasts between tribal and allotted land use patterns revealed how the latter was destroying tribal life and creating indigent and landless Indians. (Sutton, 1975:126-7)

Implementation of the allotment policy on a reservation was significant in the disintegration of the tribe's previously existing community structures. The relationship of societies in which allotment of land took place before knowledge of the Ghost Dance had been received, with level of acceptance of the movement, therefore will offer some evidence of the role of integration in acceptance of social movements.

If two tribes which had strong religious barriers to the Ghost Dance are eliminated,² five tribes remain in the low acceptance category. These are the Fox, Kickapoo, Omaha, Santee Sioux, and Winnebago. The latter four tribes were each allotted before Wovoka's revelation in 1889: the Kickapoo in 1865 (Gibson, 1963:135), the Omaha in 1832 (Fletcher, 1972:624), the Santee Sioux in 1870 and again in 1885 (Meyer, 1967:182), and the Winnebago in 1871 and 1876 (information provided by the BIA). According to records of the Bureau of Indian Affairs (U.S. Department of the Interior, 1977), the Fox were allotted lands in 1891. Thus their reservation was allotted before Mooney visited them, but as he does not state when the Fox first heard of the Ghost Dance it cannot be determined if it was before or after allotment took place. Nevertheless, for purposes of statistical analysis the Fox are included, and the year 1889 used as a cut-off date. This is the year of the Paiute Messiah Wovoka's revelation and the initiation of the Ghost Dance religion.

According to available information, with the exception of allotments to 55 Pawnee families in 1882 (Hyde, 1951:342), all tribes that fall within the high acceptance category either were never allotted or were allotted lands in severalty after 1889. There therefore appears a

high correlation between the allotment of lands in severalty and low acceptance of the Ghost Dance.

If we employ the categorization of tribes in the Appendix, the relationship between allotment and low acceptance appears as $\phi = .61$; if the Navaho and Southern Ute are discounted (see fn. 2), the relationship appears $\phi = .76$. As can be observed, this relationship is stronger than either of those which flow from Carroll's arguments.

MOBILIZATION THEORY

The correlation is of theoretical significance in the study of social movements. It supports the contention that movements are most likely to occur in contexts of preexisting social networks and are least likely to take place in contexts of social disintegration. The evidence thus suggests a competing argument to the mass society theory presented by Carroll, and lends support to a mobilization theory of social movements as described by McCarthy and Zald (1977), Freeman (1975) and others.

An assumption underlying the mobilization argument is that social strain creates only the potential for social movements and not the movements themselves. Assuming the existence of collectivities or quasi-groups with grievances, Oberschall presents a classification of collectivities on the basis of the degree of both vertical and horizontal integration. In a society which is segmented, i.e., in which there are few bonds between the collectivity and others higher up in the stratification system, the greater the horizontal integration the greater the tendency to accept a social movement. In other words, "rapid mobilization does not occur through recruitment of large numbers of isolated and solitary individuals. It occurs as the result of recruiting blocs of people who are already highly organized and participants" (Oberschall, 1973:125).

In a more specific application of this perspective, Freeman (1975) presents a model proposing three prerequisites for mobilization into a social movement: one or more precipitants, cooptability, and a preexisting communications network. Previously organized networks are conducive to the rapid rise and acceptance of social movements. The least disintegrated groups are those most likely to mobilize. Taking this approach, one would expect a lack of integration to tend to hinder the acceptance of a revitalization movement.

If land allotment can be taken as an indication of a breakdown in tribal integration (as the literature strongly suggests it can), we do indeed find low acceptance of the movement in

² There is evidence to indicate that both the Navaho and the Southern Ute were faced with strong ideological barriers to acceptance of the Ghost Dance doctrine. In aboriginal Southern Ute ideology, a ghost can claim a relative in death. Opler (1963:189) notes that when a personal emissary to the Southern Utes stated that Ute ancestors would come from the west in bodily form, and set the time within the next year, "The Ute waited, torn between fear of the actual ghostly visitations (which, according to their own beliefs spelled death for the living) and doubt that such an event could ever happen." A similar fear of ghosts can be found among the Navaho, and Hill (1965:511) suggests that this accounts for their low acceptance of the Ghost Dance.

For the Navaho with his almost psychotic fear of death, the dead and all connected with them, no greater cataclysm than the return of the departed or ghosts could be envisaged. In short, the Navaho were frightened out of their wits for fear the tenets of the movement were true.

those tribes which had, in Oberschall's terms, low horizontal integration, or in Freeman's terms, in those tribes which did not have a preexisting communications network.

POLICY AND SOCIAL MOVEMENTS

The high correlation between land allotment and low acceptance of a revitalization movement is of additional significance. It points to the value of examining the relationship between policy and social movements, and in particular, to the importance of land policies in American Indian movements.

Keeping a population physically separated so that no sense of common interest or solidarity can easily develop may be regarded as a way of preventing potential partisans from organizing (Gamson, 1968). In this sense the policy of abolishing communal land ownership and of allotting lands in severalty served as a mechanism for social control, and discouraged acceptance of a social movement.

In addition to breaking up the preexisting communications network then, the policy of allotment of land in severalty had social control effects by reducing incentives for joint action; furthermore, by removing control of land from the tribal organization, the policy greatly limited the field of authority of native social and political structures.

It has often been observed that one cannot talk about American Indians without talking about the land; in the United States the Indians are the only "territorial" minority (Sutton, 1975:ix). Land continues to be the focal point of conflict between Indians and the larger society. The findings in this analysis of the Ghost Dance lend weight to Sutton's (1975:2) observation that "the reservation not only has sustained tribal culture, but also has formed the base from which to generate a new native nationalism." This study suggests the potential in examining the role played by land policies in movements for tribal self-determination.

Gail Landsman
Baltimore, Maryland

REFERENCES

- Aberle, David
1970 "A note on relative deprivation theory as applied to millenarian and other cult movements." Pp. 209-14 in Sylvia Thrupp (ed.), *Millennial Dreams in Action*. New York: Schocken.
- Barber, Bernard
1941 "Acculturation and messianic movements." *American Sociological Review* 6:663-9.
- Brown, Kaye
1976 "Quantitative testing and revitalization behavior: on Carroll's explanation of the Ghost Dance." *American Sociological Review* 41:741-4.
- Carroll, Michael
1975 "Revitalization movements and social structure: some quantitative tests." *American Sociological Review* 40:389-401.
- Fletcher, Alice and Francis LaFlesche
1972 *The Omaha Tribe*. Lincoln: University of Nebraska Press.
- Freeman, Jo
1975 *The Politics of Women's Liberation*. New York: McKay.
- Gamson, William
1968 *Power and Discontent*. Homewood: Dorsey Press.
- Gibson, A. M.
1963 *The Kickapoos: Lords of the Middle Border*. Norman: University of Oklahoma Press.
- Hill, W. W.
1965 "The Navaho Indians and the Ghost Dance of 1890." Pp. 510-3 in William Lessa and Evon Z. Vogt (eds.), *Reader in Comparative Religion*. New York: Harper and Row.
- Hyde, George
1951 *The Pawnee Indians*. Norman: University of Oklahoma Press.
- James, Harry C.
1974 *Pages from Hopi History*. Tucson: University of Arizona Press.
- Joseph, Alvin Jr.
1965 *The Nez Perce Indians and the Opening of the Northwest*. New Haven: Yale University Press.
1968 *The Indian Heritage of America*. New York: Bantam Books.
- McCarthy, John D. and Mayer N. Zald
1977 "Resource mobilization and social movements: a partial theory." *American Journal of Sociology* 82:1212-41.
- McNickle, D'Arcy
1973 *Native American Tribalism: Indian Survivals and Renewals*. London: Oxford University Press.
- Meyer, Roy M.
1967 *History of the Santee Sioux: United States Indian Policy on Trial*. Lincoln: University of Nebraska Press.
- Mooney, James
1965 *The Ghost Dance Religion and the Sioux Outbreak of 1890*. Chicago: University of Chicago Press.
- Oberschall, Anthony
1973 *Social Conflict and Social Movements*. Englewood Cliffs: Prentice-Hall.
- Opler, Marvin K.
1963 "The Southern Ute of Colorado." Pp. 119-203 in Ralph Linton (ed.), *Acculturation in Seven American Indian Tribes*. Gloucester: Peter Smith.
- Otis, D. S.
1973 *The Dawes Act and the Allotment of Indian Lands*. Edited and with an introduction by

- Francis Prucha. Norman: University of Oklahoma Press.
- Priest, Loring Benson
1973 *Uncle Sam's Stepchildren: The Reformation of U.S. Indian Policy, 1865-1887*. New York: Octagon Books.
- Prucha, Francis Paul, ed.
1973 *Americanizing the American Indians*. Cambridge, Ma.: Harvard University Press.
- Prucha, Francis Paul
1976 *American Indian Policy in Crisis: Christian Reformers and the Indian, 1865-1900*. Norman: University of Oklahoma Press.
- Slotkin, James
1975 *The Peyote Religion*. New York: Octagon Books.
- Sutton, Imre
1975 *Indian Land Tenure*. New York: Clearwater Publishing.
- U.S. Dept. of the Interior, Bureau of Indian Affairs
1977 Personal communication from Rights Protection Office, April 20, 1977.
- Wallace, Anthony
1956 "Revitalization movements." *American Anthropologist* 58:264-81.

APPENDIX

Allotment of Land in Severalty (Year of Allotment in Parentheses)		
Tribal Response to Ghost Dance	Unallotted in 1889	Allotted Prior to 1889
High Acceptance	Arapaho (1907)	
	Arikara (1900)	
	Assinboin (1908)	
	Bannock (1914)	
	Caddo (1902)	
	Chemehuevi (none)	
	Cheyenne (1932)	
	Commanche (1906)	
	Gosiute (none)	
	Gros Ventre (1925)	
	Havasupai (none)	
	Hidatsa (1925)	
	Hopi (none)	
	Kiowa (1901)	
	Kiowa-Apache (1901)	
	Mandan (1900, 1910)	
	Mescalero Apache (none)	
	Nez Perce (1895, 1902)	
	Oto (1899)	
	Paiute (none)	
Low Acceptance	Shoshoni, Wind River (1907-15)	
	Taos (none)	
	Teton Sioux (1898, 1906-22)	
	Ute, Uncompagre, and Uintah (1905-08)	
	Walapai (none)	
	Wichita (none)	
	Fox (1891)	Kickapoo (1865)
	Navaho (1908)	Omaha (1882)
	Southern Ute (1896)	Santee Sioux (1870, 1885)
		Winnebago (1871, 1876)

REJOINDER TO LANDSMAN*

One of my goals was to encourage researchers to use the case of the Ghost Dance to test quantitatively hypotheses relating to revitalization movements. I am pleased to see that Landsman has done just that. Unfortunately, there are several methodological errors in her

comment that make it difficult to evaluate her substantive argument.

What I originally hypothesized is that if a society has social structures which provide the individual with a strong sense of attachment, then such societies would be less likely to accept a revitalization movement like the Ghost Dance. Assuming that unilineal descent groups promoted this sense of attachment, I predicted that the presence of such groups should have been negatively correlated with acceptance of

* Address all communications to: Michael P. Carroll; Department of Sociology; University of Western Ontario; London, Ontario N6A 5C2.

the Ghost Dance. The original data supported this prediction.

Landsman argues that four tribes (the Comanche, Mescalero Apache, Nez Perce and Hopi) should be reclassified from *low* to *high* acceptance on the basis of their involvement with movements other than the Ghost Dance, and strongly implies that this reclassification would weaken my results. This implication is incorrect. Three of these tribes (the Comanche, Nez Perce and Mescalero Apache) lack unilineal descent groups (cf. Murdock, 1967) and therefore my hypothesis quite clearly predicts that they *should* have been high acceptance tribes. In fact, reclassifying these four tribes as Landsman suggests raises the correlation (I'll use phi, since she prefers it) between low acceptance and the presence of unilineal descent groups from .36 (in the original analysis) to .42. If we drop the Jicarilla Apache from the sample, as Landsman further suggests, the correlation increases to .48, since the Jicarilla Apache lacked unilineal descent groups and yet were coded *low acceptance* in the original analysis.

Admittedly, these reclassifications would weaken the support for the other hypothesis that I considered, which linked acceptance to relative deprivation. But I considered this hypothesis only because it is quite well-established in the literature on revitalization movements. The hypothesis which linked acceptance to the absence of unilineal descent groups, on the other hand, was new and was perhaps the most original theoretical contribution of my article. Personally, then, I am more than willing to accept any reclassifications (such as Landsman's) that would undercut the traditional deprivation hypothesis in favor of the hypothesis (involving unilineal descent) that I developed myself.

But though I am so inclined to accept the suggested reclassifications, I must nevertheless point out that these reclassifications involve several errors. Note that Landsman has redefined the dependent variable from "acceptance of the Ghost Dance" to "acceptance of any revitalization movement." Her first error then is that she has limited herself to my initial sample, which included only those societies that had been exposed to the Ghost Dance. She makes no attempt to include in her analysis tribes not in my sample but which might nonetheless have been tribes very much involved in one of the other movements that she mentions. An example will illustrate the problem.

Landsman reclassifies the Nez Perce on the grounds that they were involved with the Smohalla cult. But Mooney (1973:708-46)

makes it clear that the adherents of this cult were widely scattered among the tribes of the Columbia River Basin. In fact, in his section on this cult, Mooney discusses over three dozen tribes from this region, virtually all of which were *not* included in my sample (as they were not involved with the 1889 Ghost Dance). If Landsman were truly interested in the study of "revitalization movements in general" and wished to seriously include the Smohalla cult in her analysis, then she would have to go through Mooney's discussion and classify these additional tribes into high and low acceptance categories.

There is, however, the distinct possibility that Landsman may be unaware of that section of Mooney's report in which he gives an extended discussion of this cult. She cites only the 1965 Phoenix edition of his work. This is an abridged version that deletes over 100 pages of Mooney's original text, notably including those sections in which Mooney discussed Indian movements, such as the Smohalla cult, that existed prior to the Ghost Dance. (The original report was published in its entirety as a Dover reprint in 1973.) If Mooney's discussion of these other cults was missed because the abridged version of his work was used, then this is simply sloppy scholarship.

Actually, the Smohalla cult is a particularly unfortunate case for Landsman to have mentioned. Mooney (1973:720-1) reports that Smohalla himself knew about the land allotment laws discussed by Landsman and regarded land allotment as contrary to Indian cosmology. This alone, without invoking arguments about isolation and communication, could account for a negative correlation between the establishment of land allotment and the acceptance of Smohalla's doctrine.

But perhaps Landsman's most serious error occurs in her reclassification of the Comanche and the Mescalero Apache on the grounds that they were involved with the Peyote cult. My own knowledge of the Peyote cult is minimal, but even a quick consultation of a single source (LaBarre, 1975) turns up six cultures in Landsman's sample (the Shoshone, Winnebago, Kickapoo, Omaha, Fox and Navaho) in which a Peyote cult began to flourish only *after* the year that she gives as the year in which land allotment was established for the culture in question. Since she argues that land allotment should prevent the acceptance of social movements, all six cases are inconsistent with her argument.

In short, by reclassifying *only* the Comanche and the Mescalero Apache, Landsman has reclassified only those cases that help her argument. If the reclassification of cultures on

the basis of their involvement with either the Ghost Dance or the Peyote cult is done systematically (which at least means reclassifying not simply the Commanche and the Mescalero Apache, but also the six tribes just mentioned), then the correlation between low acceptance and land allotment drops from the impressive .61 that Landsman reports to the less impressive .16.

Given the confusion that results from Landsman's attempt to deal with "revitalization movements in general," the best way to evaluate her theoretical argument is again to restrict ourselves to the Ghost Dance. If this is done, which means placing the Commanche, Mescalero Apache, Nez Perce and Hopi back into the low acceptance category, then the correlation between low acceptance and land allotment is .43. If we drop the Jicarilla Apache from my original sample (for the same reasons that led Landsman to drop the Jicarilla from her sample) then the correlation between the presence of unilineal descent groups and low acceptance is .40. The two correlation coefficients, given the small sample size, are virtually identical, and it is fair to say that both hypotheses are equally well supported by the data.

But while Landsman accounts for the correlation between low acceptance and land allotment by arguing that land allotment destroyed a community's ability to organize a social movement, an alternative argument—and one perfectly consistent with my own theoretical reasoning—is possible. Note first that land allotment was not widespread prior to 1889: Landsman lists only five tribes in which land had been allotted prior to that date. Which tribes, do you suppose, would have been singled out as the early targets of the land allotment policies?

If Landsman's summary of the motivations driving those whites who promoted land allotment is correct, then one of their goals was to undermine the hold that various tribal collectivities had over the Indians. With such a goal, the most obvious targets would have been those tribes in which such collectivities did in fact exert a strong hold over their members. Furthermore, my original argument was precisely that unilineal descent groups were collectivities of just this sort.

Putting all this together leads to the very straightforward prediction that those cultures with unilineal descent groups would most likely have been the early targets of land allotment laws and policies. If we take the 35 tribes in Landsman's sample and cross-tabulate "presence/absence of unilineal kin groups" (from Murdock, 1967) with "land allotted prior

to 1889/land unallotted in 1889" (from Landsman's table), then the correlation is strong (.46) and in the expected direction (unilineal tribes *were* more likely to have been subjected to land allotment prior to 1889). In other words, the data suggest that the presence of unilineal kin groups both reduced the likelihood that a culture would accept a revitalization movement *and* made it more likely that that culture would become the target of land allotment laws. This would indeed produce a (spurious) correlation between low acceptance and land allotment.

In summary then, there is nothing in Landsman's comment that leads me to question either the hypothesis that I originally developed in connection with unilineal descent groups or the evidence that I advanced in support of that hypothesis. Landsman *has* turned up a correlation between low acceptance and land allotment, but this is a relationship that is easily taken into account by my original theory.

Michael P. Carroll
University of Western Ontario

REFERENCES

- LaBarre, Weston
1975 *The Peyote Cult*. 4th ed. rev. New York: Schocken.
Mooney, James
1965 *The Ghost Dance Religion*. Abridged and with an introduction by A.F.C. Wallace. Chicago: Phoenix.
1973 *The Ghost Dance Religion and Wounded Knee*. New York: Dover.
Murdock, George Peter
1967 *Ethnographic Atlas*. Pittsburgh: University of Pittsburgh Press.

THE EFFECTS OF POLITICAL PARTICIPATION AND SOCIALIST PARTY STRENGTH ON THE DEGREE OF INCOME INEQUALITY

(COMMENT ON HEWITT, ASR JUNE, 1977)*

Prior to the publication of Hewitt's (1977) research, the findings of the cross-national investigation of the determinants of inequality were contradictory and inconclusive due to such crucial problems as inadequate operationalizations of income inequality and

* Address all communications to: Steven Stack; Department of Sociology; Alma College; Alma, MI 48801.

different measures of political democracy (Jackman, 1975; Peters, 1973; Cutright, 1967; Parkin, 1971). Hewitt's (1977) well-designed paper makes a substantial contribution to the resolution of these problems. His results are based on more valid and reliable data than most of his predecessors and should be given more weight by scholars in the field. For example, he uses a theoretically sound measure of income inequality based on household income as opposed to relying on an approximate measure based on sectoral income. His findings provide strong evidence against the position of Jackman (1975) and others that political democracy does not influence inequality independent of the level of economic development. In addition, Hewitt provides the first systematic test of the relationship between socialist party strength and the degree of inequality. The results of this part of his analysis support Lenski's (1966) theory that governments dominated by socialist or labor parties will bring about the greatest reduction in stratification. Finally, the impact of socialist strength on inequality is found to be greater than the impact of simple democratic structures on inequality.

The present paper's concern is to provide a brief critique of the part of Hewitt's paper that deals with the income inequality dimension of stratification. There are two methodological shortcomings in this part of his work. First, his index of simple democracy emphasizes dimensions of political organization that may not be the key sources of political pressure for redistribution. These include the number of years a nation has had the secret ballot and responsible government or the election of officers to the executive branch. Hewitt's measure of simple democracy emphasizes the mere skeleton of democratic political organization. Alternative measures of political democracy that get beyond the elementary structure could very well lead to different results. For example, if we measure political democracy in terms of the degree of political participation, for example, the degree to which the citizens exercise their rights to suffrage and the secret ballot, we might find that it is more of an important factor than suggested by Hewitt's research. Second, Hewitt fails to investigate the relationship between political variables and the overall degree of income inequality. While the determinants of the income share of top income groups are an important concern, it is also appropriate to investigate the determinants of the general degree of income inequality.

The present study reanalyzes Hewitt's data using an index of political democracy which measures the degree of actual participation in

politics. We contend that democratic political organization may not have a substantial impact on reducing inequality unless a relatively large proportion of lower status citizens take advantage of democratic structures. Our measure of political participation is the proportion of the adult population that voted in 1965.¹ As Erbe (1964) argues, political participation varies directly with social class status. As voter turnout increases proportionately more persons from the lower social classes are exercising their right to vote and there is more pressure for the election of persons that will represent their interests and for policy that will benefit their group. For example, we know that the higher the voter turnout, the higher the proportion of blue-collar workers, labor leaders, and other nontraditional groups that are elected to parliaments and cabinets (Wences, 1967; 1969). We would anticipate that parliaments composed of high proportions of such nontraditional groups would be more likely to favor policies to reduce inequality. Since it is known that groups with relatively low socioeconomic status have more "liberal" attitudes on economic policies, and are more aware of serious welfare problems, more concerned with the gap between the rich and poor, and are more supportive of government programs for the poor, we would anticipate that the greater their participation in politics, the greater the probability that government will reduce inequality through such means as minimum wage laws, full employment policies, welfare expenditures, and progressive taxation (Huber and Form, 1973; Verba and Nie, 1972).

We anticipate that the political participation of lower status groups and socialist party strength are significantly related. The presence of a socialist party should foster such participation since it favors the interests of the less privileged groups in society.² However, in societies without strong socialist parties, and there are many in the group of nations under investigation, we would anticipate that relatively high political participation would lead to the rise of egalitarian movements within estab-

¹ The data on voter turnout were taken from Taylor and Hudson (1972) and from Russett et al. (1964) for three missing cases. Data on all other variables were obtained from the same sources as in Hewitt (1977). We decided to restrict the number of independent variables to three variables since as Blalock (1972:468) points out, as the number of variables approaches the number of cases the results of regression analysis may be unreliable due to the differentially high reliance on chance fluctuations.

² In the present study the Pearson Product Moment correlation between socialist party strength and voter turnout is .59.

Table 1. The Effects of Voter Turnout, Energy Consumption Per Capita, and Socialist Party Strength on the Gini Index of Income Inequality (N=18)

Variable	Regression Coefficient	Standard Error of Coefficient	Computed Value of Student's T	Beta Coefficient
VTT	-0.002	0.001	-2.511*	-0.541
EC/CAP	-0.000	0.000	-2.135*	-0.371
SOC	-0.001	0.001	-0.965	-0.208
Intercept . . .	.634146			
$R^2 = .49$				

Notes: VTT: Voter turnout as a percent of the adult population, 1965.

EC/CAP: Energy consumption per capita, 1965.

SOC: Mean socialist party strength in parliament, 1945-1965.

* Statistically significant at the .05 level ($p < .05$).

lished nonsocialist parties. For example, the American Democratic party is not classified as *socialist* by Hewitt, but it has been a key force in implementing policies to reduce inequality. Our transfer payment system, for example, significantly reduces the amount of income inequality and some careful research indicates that it is just as effective in the reduction of inequality as the much heralded system of "socialist" Sweden (Reynolds and Smolensky, 1977; Rosenthal, 1967: 135-53). We anticipate that high political participation will influence inequality in the absence of an official socialist party and that it will have an effect on income inequality that is independent of socialist party strength.

The present investigation will add a third dependent variable to the analysis of income inequality, the Gini index of income inequality, which measures the overall degree of income differences. The Gini coefficients were obtained from the same source Hewitt used to derive his data on the income shares of the top 5% and top 20% of the population (Paukert, 1973).

We use energy consumption per capita as our control variable, the same indicator that was used by Hewitt for the level of economic development. Finally, in order to measure the relative merits of political participation as a determinant of income de strati fication, we use Hewitt's measure of the degree of social democracy, the mean proportion of seats held

by socialist parties in parliament from 1945-1965.

Table 1 gives the results of the regression analysis concerning the determinants of the degree of overall income inequality. The most important determinant of general inequality is our index of political participation (beta = -.541). When the level of development and socialist party strength is controlled for, the greater the voter turnout, the less the inequality. Socialist strength bears no significant influence ($p < .10$) on income inequality once we control for voter turnout and level of development.

We find similar results if we measure income inequality in terms of the share of the top 5%. The data in Table 2 illustrate that if we control for the other independent variables, voter turnout is the factor that is most closely associated with low inequality (beta = -.454, $t = -1.937$, $df = 14$, $p < .05$). Again, once we control for the other variables, socialist party strength lacks a significant relationship with inequality of incomes.

However, as the regression results in Table 3 indicate, if we measure income inequality in terms of the income share of the top 20% of households, voter turnout is not significantly related to inequality ($p < .05$) once we control for socialist strength and level of economic development. Socialist party strength is significantly related to the income share of the top fifth. With the other two variables in the re-

Table 2. The Effects of Voter Turnout, Energy Consumption Per Capita, and Socialist Party Strength on the Income Share of the Top 5% of Households (N=18)

Variable	Regression Coefficient	Standard Error of Coefficient	Computed Value of Student's T	Beta Coefficient
VTT	-0.188	0.097	-1.937*	-0.454
EC/CAP	-0.001	0.001	-1.633	-0.309
SOC	-0.108	0.093	-1.153	-0.270
Intercept . . .	42.5811			
$R^2 = .41$				

See notes to Table 1.

Table 3. The Effects of Socialist Strength, Energy Consumption Per Capita, and Voter Turnout on the Income Share of the Top Quintile (N=18)

Variable	Regression Coefficient	Standard Error of Coefficient	Computed Value of Student's T	Beta Coefficient
SOC	-0.120	0.059	-2.042*	-0.413
EC/CAP	-0.001	0.000	-2.689*	-0.440
VTT	-0.099	0.061	-1.622	-0.328
Intercept . . .	61.9408			
$R^2=.55$				

See notes to Table 1.

gression controlled for, the greater the socialist strength, the less the income inequality. However, the level of economic development (beta = -.440) is more significantly related to inequality than is socialist strength (beta = -.413).

Our results indicate that an operationalization of political democracy which stresses political participation, as opposed to the structural elements of democracy, is a better predictor of the level of income inequality than social democracy as measured by socialist party strength. It is useful to make a distinction among three definitions of democracy in terms of its basic structure, level of participation, and the relative power of socialist parties. Previous research has emphasized the first and third definitions. The present paper provides support for the study of a third relevant definition of democracy in research dealing with inequality.

Steven Stack
Alma College

REFERENCES

- Blalock, Hubert M.
1972 *Social Statistics*. New York: McGraw-Hill.
- Cutright, Phillips
1967 "Inequality: a cross-national analysis." *American Sociological Review* 32:562-78.
- Erbe, William
1964 "Social involvement and political activity: a replication and elaboration." *American Sociological Review* 29:192-215.
- Hewitt, Christopher
1977 "The effect of political democracy and social democracy on equality in industrial societies: a cross-national comparison." *American Sociological Review* 42:450-64.
- Huber, Joan and William Form
1973 *Income and Ideology*. Glencoe: Free Press.
- Jackman, Robert
1975 *Politics and Social Equality*. New York: Wiley.
- Lenski, Gerhard
1966 *Power and Privilege*. New York: McGraw-Hill.
- Parkin, Frank
1971 *Class Inequality and the Political Order*. New York: Praeger.

- Paukert, Felix
1973 "Income distribution at different levels of development: a survey of evidence." *International Labor Review* 108:97-125.
- Peters, B. Guy
1973 "Income inequality in Sweden and the United Kingdom: a longitudinal analysis." *Acta Sociologica* 16:108-20.
- Reynolds, Morgan and Eugene Smolensky
1977 *Public Expenditures, Taxes, and the Distribution of Income*. New York: Academic Press.
- Rosenthal, Albert
1967 *The Social Programs of Sweden*. Minneapolis: University of Minnesota Press.
- Russett, Bruce M., Hayward R. Alker, Jr., Karl Deutsch, and Harold D. Lasswell
1964 *World Handbook of Political and Social Indicators*. New Haven: Yale University Press.
- Taylor, Charles and Michael C. Hudson
1972 *World Handbook of Political and Social Indicators*. New Haven: Yale University Press.
- Verba, Sidney and Norman H. Nie
1972 *Political Participation in America*. New York: Harper.
- Wences, Rosalio
1967 *Occupational Background of Political Leaders*. Ph.D. dissertation, Department of Sociology, University of Iowa, Iowa City.
- 1969 "Electoral participation and the occupational composition of cabinets and parliaments." *American Journal of Sociology* 75:181-92.

REPLY TO STACK*

Stack's main point is a good one. He argues that by emphasizing the structural characteristics of political democracy¹ my

* Address all communications to: Christopher Hewitt; Department of Sociology; University of Maryland Baltimore County; 5401 Wilkens Ave.; Baltimore, MD 21228.

¹ I would like to correct a misprint in the original article. The date given in Table 2 for the attainment of responsible government in Italy should be 1919 not 1959.

analysis ignores the extent to which citizens take advantage of such democratic structures. His measure (voter turnout) is a plausible operationalization of this latter aspect of democracy. However, there are some problems with his position.

The crucial assumption is that increased voter turnout with a concomitant increase in the proportion of lower-class voters will result in "political pressure for redistribution." This would seem to be true *only* if the electorate is mobilized along class lines. In a number of countries, however, the salient political cleavages are religious or ethnic. In Italy, the Netherlands and Germany, confessional parties account for 40–50% of the vote (Russett, 1964). It is striking that the two countries with the highest voter turnout are Italy and the Netherlands, suggesting that high electoral participation by lower socioeconomic groups may result from religiosity as well as radicalism. Ethnic voting in Trinidad resulted in an 88% vote in the 1961 election. Malik (1971:121–2) comments that this high turnout was due to "a greater awareness of the major political issue involved: vindication of the racial pride of the respective ethnic groups."

The only evidence cited for the assumption that high voter turnout leads to the election of persons representing and policies benefiting lower-class interests is Wences (1969). Yet Wences appears to argue that representation of the lower-middle and lower classes in the political elite is only token regardless of voting rates (1969:186, 188) and that the recruitment of labor leaders to cabinets "is heavily dependent on the electoral success of left-wing parties closely identified with labor organizations" (1969:185). Surely this is evidence for the importance of socialist parties rather than voter turnout?

One important difference between Stack's democratic variable and my social-democratic one may account for the difference in our findings. I argue that the effect of politics in democratic societies is incremental and must be measured over a period of time. Stack measures voter turnout in 1965 only. Yet in Venezuela and Argentina military juntas ruled for most of the 1945–65 period. Surely a measure of electoral participation should take the *absence* of elections into account? Even where elections are regular events voter turnout is highly variable and presumably therefore a single election will be unreliable as a measure of egalitarian pressure. Fourteen countries in Stack's analysis which are listed in Mackie and Rose (1974) had a mean variation in electoral turnout since 1945 of 12.3%. In Trinidad electoral turnout varied from a high of 88.1% in

1961 to a low of 32.9% in 1971. Thus the variation in turnout within one country was far greater than the variation between *all* the countries in Stack's sample—excluding South Africa.²

Despite these problems, Stack's finding that voter turnout is correlated with equality is interesting. To decide between socialist party strength and voter turnout as factors in reducing inequality is difficult given the small data set and the high intercorrelations between the political variables. Subsequent research by focusing on government policies and relating policies to both political factors and economic equality may resolve the issue.

Christopher Hewitt

University of Maryland Baltimore County

REFERENCES

- Mackie, Thomas and Richard Rose
1974 *The International Almanac of Electoral History*. New York: Free Press.
- Malik, Yogendra
1971 *East Indians in Trinidad*. London: Oxford University Press.
- Russett, Bruce
1964 *World Handbook of Political and Social Indicators*. New Haven: Yale University Press.
- Wences, Rosalio
1969 "Electoral participation and the occupational composition of cabinets and parliaments." *American Journal of Sociology* 75:181–92.

DIALECTICAL ANALYSIS AND CLOSED SYSTEMS: CLASS SOCIETIES OR WORLD-ECONOMY?

(COMMENT ON APPELBAUM, ASR
FEBRUARY, 1978)*

In highlighting aspects of the Marxian method that are typically distorted in conventional sociological renderings, Appelbaum's (1978) contribution is most welcome. The reduction of dialectics to a heuristic device, the generalization of historically specific struggles into transhistorical universals about "conflict," the severance of necessary links be-

² Excluding South Africa (where voting is restricted to whites and the rate in consequence is only 14.3%), the country scores range from 89.2% (Italy) to 56.8% (United States).

* Address all communications to: Walter L. Goldfrank; Dept. of Sociology; Merrill College; University of California; Santa Cruz, CA 95046.

tween social scientists as theorists and social scientists as living practitioners in a concrete present—all these features of standard sociological thought deserve critique and rebuttal. One can further applaud Appelbaum's insistence that social theories ought to explain change at the social level (although it is hard to believe that anyone ever took seriously the notion that population growth is a biological, rather than a social phenomenon). In referring to social change, Appelbaum thus uses such phrases as "endogeneous structural social change" (p. 68), "endogenous structural change" (pp. 74, 79), "endogenous social change" (p. 70), "change as internal to actual sociohistoric systems" (p. 74).

Endogenous at the social level, yes. But endogenous means *within*, and hence the question arises, *within what?* Appelbaum assumes that the proper unit of analysis for capitalism is class society. That is, like the standard sociologists he criticizes, he is mystified by and perpetuates the fetishism of the nation-state. Such a fetishism is contradicted by his own explication of the conditions which modify the tendency for the rate of profit to fall through the interaction of C (constant capital), V (variable capital), and S (surplus value). *Some* of those conditions occur largely within the boundaries of the nation-state (here nineteenth century England, since the example is drawn from *Capital*, Vol. 1): for example, the theoretical skill of working-class leadership, the tolerance of capital for working-class organization, monopolization of the means of production, technical change.

But other conditions, crucially, do *not* occur within nation-state boundaries. Among those mentioned by Appelbaum himself are "the ability of capital to extract surplus from foreign workers to the advantage of domestic workers," "cheapening the means of subsistence" (in the concrete case, Corn Law repeal), "shifting production to colonies with a ready source of cheap labor," "extend[ing] capitalist economic relations abroad (e.g., foreign investment, which permits the importation of cheap raw materials and machinery produced with low-paid foreign labor)" (p. 78). Another condition affecting C, V, and S via the class struggle—especially interesting given the example of nineteenth century England—is the migration of labor: the import, temporary and permanent, of foreign workers, not only the Irish;¹ and the export of surplus artisans, farm-

ers, and other workers, who in the absence of the opportunity to settle in the United States or the colonies might well have changed the terms of the struggle. That so-called competitive capitalism could have developed in England as it did, to take textile manufacture as the leading sector, is utterly inconceivable without markets wider than England itself and without cheap cotton from the slave South. "In fact, the veiled slavery of the wage-workers in Europe needed, for its pedestal, slavery pure and simple in the new world" (Marx, 1867: 759–60).

One could go on elaborating the world-systemic conditions that made "English" competitive capitalism possible; but the general point ought to be clear. The unit of analysis within which capitalism operates as an actual sociohistoric system is a *world-economy*,² not an array of nation-states, societies, or social formations. Capitalism, after all, is merely the transition from (European) feudalism to (world) socialism. Historical social science taking *systematic* aim at the structures, transformations, and perhaps developmental stages of this moving target is in its youth (for a recent summary, see Research Proposal, 1977), though surely it builds on major traditions of inquiry, most importantly Marxism. In the analysis of change, "endogenous structural change" if you like, "surplus value, production for exchange, and class conflict" (p. 79) are indeed critical concepts, though not the only ones. The phenomena to which they refer move within a dynamic totality, the capitalist world-economy. Many of Appelbaum's conditions modifying the tendency of the profit rate to fall require the introduction of untheorized phenomena outside the boundaries of the English nation-state. This should give him and other Marxists pause as we make the theoretical, empirical, and practical advances we seek.

Walter L. Goldfrank
University of California, Santa Cruz

¹ "... the London labour-market is always overstocked with German and other candidates for death in the bakeries" (Marx, 1867:267).

² *World-economy* is used here in the technical sense of two or more politically sovereign units interdependent with respect to the flow of necessary commodities. Only in the past 75 years has the modern capitalist world-economy begun to reach the asymptotic inclusion of all the populated regions of our planet, removing the theoretical possibility of *geographically* exogeneous change. Perry Anderson (1974:172–360) provides an interesting example of such change in the past with his discussion of the effects of the seventeenth century East European wars on the development of Sweden, Prussia, Poland, Austria, and Russia.

REFERENCES

- Anderson, Perry
 1974 *Lineages of the Absolutist State*. London: New Left Books.
- Appelbaum, Richard P.
 1978 "Marx's theory of the falling rate of profit: towards a dialectical analysis of structural social change." *American Sociological Review* 43:67-80.
- Marx, Karl.
 [1867] *Capital*. Vol. 1. Moscow: Foreign Languages Publishing House.
- Research Proposal
 1977 "Patterns of development of the modern world system." *Review* 1:111-45.

RESPONSE TO GOLDFRANK*

Walter Goldfrank's comment is well-taken and, as he acknowledges, in no way contradicts the main thrust of my argument, which was to suggest ways in which a Marxist analysis is fruitful for comprehending processes of social change. While Marx utilized an abstracted model of capitalist economic relations in *Capital* (from which my argument derives), it is clear that an adequate theoretical formulation must consider national economies within the framework of a world economic system. This was already true in Marx's time, and is far more so today, as Goldfrank notes. While I continue to believe that such concepts as surplus value, production for exchange, class conflict, and the like will prove to be central in providing an understanding of the bases of endogenous structural change in contemporary societies, I strongly concur that the frame of reference must ultimately be the global economic system. This will, in turn, modify the theoretical categories with which we work, as currently "untheorized phenomena" become incorporated within the body of Marxist economic and social theory.

Richard P. Appelbaum
*University of California,
 Santa Barbara*

PARSONS'S VOLUNTARISM

(COMMENT ON ALEXANDER, ASR APRIL, 1978)**

I found Alexander's (1978) article interesting both for what it includes and for what it passes

* Address all communications to: Richard P. Appelbaum; Department of Sociology; University of California; Santa Barbara, CA 93106.

** Address all communications to: John W. Heeren; Dept. of Sociology; California State College; San Bernardino, CA 92407.

over. Of the first sort, he nicely points up that a central theme in Parsons's work is resolving the free will of man and the directionality of social change. Unfortunately Parsons is no more successful at this than earlier thinkers. Emphasis on the continuity in Parsons's work leads Alexander to neglect some contradictions and questionable assumptions of Parsons.

(1) Rather than it being the continuing basis of his substantive voluntarism, Parsons's formal voluntarism is ultimately eclipsed by his analysis of systems and differentiation. When Parsons argues that action is organized into systems and that these are normatively oriented, where then is the actor's choice or will? One's membership determines his action.

(2) Where is the actor's voluntarism if the direction of change—increasing differentiation—is inevitable? It is interesting that Parsons (1937:753) had criticized Weber for his "fatalistic interpretation of the process of rationalization." This sense of inevitability is much stronger in Parsons's later work than it was in Weber's. His recently developed evolutionary scheme seems to represent Parsons's discovery of the path of history. Indeed, Parsons (1966:4) sees a need to explain the coming of feudalism in Europe since it is the "most radical structural regression in the history of major societies." Presumably, those who currently favor a "small is beautiful" philosophy also would be considered regressive.

(3) The real significance of differentiation comes out in *Economy and Society*. Here Parsons and Smelser (1956:83) "discover" the correspondence of their concrete and analytic systems when they argue that concrete societies tend in general to differentiate along the lines of the Parsonian four-function scheme (1956:83). Thus, we are told that the family is "specifically located in the pattern-maintenance sub-system of the society" (1956:53).

(4) The hypostatizing of the theory is carried far enough so that Parsons (1964) in one essay suggests that the processes of differentiation should lead to the development of a new occupational role: the spiritual counselor who is intermediate between the minister and the therapist.

(5) In spite of Alexander's statement that Parsons used a conception of multidimensional causality, the more important fact is that Parsons (1966:113) imputes priority to cultural elements in the evolution of societies. Moreover, the implication is strong in his recent work that religious values are perhaps the most important elements within the cultural sphere.

(6) Alexander properly notes that Parsons's

substantive voluntarism is evaluative. More than this, the implicit value placed on individual autonomy is inconsistent with a significant portion of the sociological tradition. However much Marx and Durkheim would seem to be poles apart on other sociological issues, an argument could easily be made that they "converge" in their negative assessment of individualism in modern society. And contrary to Alexander, Marx's image of man hunting in the morning, fishing in the afternoon, and criticizing after dinner could be seen as representing significant dedifferentiation.

John W. Heeren
California State College,
San Bernardino

REFERENCES

- Alexander Jeffrey
1978 "Formal and substantive voluntarism in the work of Talcott Parsons." *American Sociological Review* 43:177-98.
- Parsons, Talcott
[1937] *The Structure of Social Action*. New York: Free Press.
1968
1964 "Mental illness and 'spiritual malaise'." Pp. 292-324 in *Social Structure and Personality*. New York: Free Press.
1966 *Societies: Evolutionary and Comparative Perspectives*. Englewood Cliffs: Prentice-Hall.
- Parsons, Talcott, and Neil Smelser
1956 *Economy and Society*. New York: Free Press.

ONCE AGAIN: THE CASE FOR PARSONS'S VOLUNTARISM*

Mr. Heeren has reiterated criticisms which have become the stock-in-trade of Parsons interpretation. Far from being unaware of the points he raises, I directed much of my reinterpretive efforts precisely to such objections. After years of partial misinterpretation and often misleading debate, the process of incorporating the important breakthroughs that Parsons achieved will, evidently, be a difficult and uneven one. Old myths die slowly.

Let me make four points:

(1) Voluntarism is not antithetical to systems analysis, nor, certainly, is it antithetical to normative control. One of the primary reasons for distinguishing, as I did in my article,

between the formal and substantive elements in Parsons's work is to point to the multilevel character of any social theory. There is a wide range of diverse components in any theory; these components may be viewed as forming a continuum from the most general kinds of commitments to the most specific (Alexander, 1980, Vol. 1, Pt. 1). Every theory contains general presuppositional commitments (what I called theoretic-epistemic, or formal elements), as well as very specific propositional statements which are much more directly derived from empirical observation. In between these two poles of the continuum, there are a number of other kinds of commitments. Ideological assumptions, for example, derive neither from presuppositions nor from empirical observation; combined with empirical propositions, however, they form the substantive elements of a sociological theory.

Another kind of intermediate element, and here we come to the issue of systems, is the kind of model a theorist chooses. The fundamental point here is that commitments to models and commitments to presuppositions vary independently. A multidimensional, voluntaristic approach on the theoretic-epistemic level can be combined with systemic models, and the result will be a voluntaristic model of social systems. On the other hand, an instrumentalist, deterministic approach at the presuppositional level, which disallows the resort to transcendent values upon which voluntarism must be based, also may be combined with a systemic model. In this case, the system theory in question will, indeed, be antivoluntaristic and deterministic. Far from his system model pushing him into an overly rigid determinism, there is, in fact, the danger that Parsons's model will slip into an overly voluntaristic position. Insofar as his presuppositional synthesis of idealism and materialism falters, this slippage frequently occurs.

To respond to a related point, voluntarism does not depend on whether an "actor's choice" is preserved, nor does it depend on whether or not an actor is described as a "member" of a normative system. In the first place, every concrete actor has a choice in every concrete situation. Parsons has never denied free will in this limited sense; he has spoken, rather, of the probability that norms will be followed in a given instance (Parsons and Shils, 1951:155-6). These norms, of course, might be, in substantive terms, highly individualistic and critical ones, so that the conformity to norms cannot be confused with conformity in the pejorative, common sense use of the term. This observation leads to my second point: it is a nominalist error, associ-

*Address all communications to: Jeffrey C. Alexander; Department of Sociology; University of California; Los Angeles, CA 90024.

ated with classical liberalism and neo-Kantian theory, to identify voluntarism with free will in the strong sense, that is, with the actions of a completely nonconstrained and nonsocialized actor. There is a long tradition in social thought, most recently exhibited by Durkheim, Freud, and Piaget, which believes, correctly in my opinion, that freedom depends, in part, on certain distinctive internal qualities which are produced only through association and internalization.

(2) As this last point helps to clarify, Parsons certainly does not advocate individualism in the *laissez-faire* sense of the term, but rather the socially-constrained exercise of individual choice. This intention, of course, is the reason for his characterization of the modern situation as one of "institutionalized individualism" (Parsons, 1967). As I tried to demonstrate in my article, Parsons's individualism is rooted, first of all, in an epistemological critique of individualistic theories like utilitarianism. His substantive theory, furthermore, tries to synthesize, with the classical liberal commitment to the individual, the approaches to individual freedom imbedded in more collectivist theories in both the materialist and idealist traditions (Alexander, 1978a:183-6). To argue that individual freedom rests upon universalistic values and upon strong bureaucratic and legal controls on the unfettered market does not impress me as an endorsement of individualism, nor as substantially different from the general positions proffered by Durkheim and Marx.

On the other hand, as I also mentioned in my article, Parsons does often exhibit an overly optimistic attitude toward the institution of private property, and often accepts with equanimity the psychological consequences of a cultural emphasis on individualism. Insofar as Parsons veers towards such an individualism, it is fair to say that he has abandoned his synthesizing impulse on the substantive—empirical and ideological—level of his theory.

(3) Parsons does not consider differentiation to be inevitable, as Mr. Heeren's own example from *The Systems of Modern Societies* demonstrates very well. Parsons does indeed describe feudalism as a "drastic regression" in western history, and he spends a good deal of time analyzing the social structure of this period (Parsons, 1971:33-45). Does this imply that differentiation is inevitable or, indeed, that Parsons believes precisely the opposite? Developmental theorists, like Freud and Piaget, outline the mental structures necessary for psychic health and cognitive maturity; does this mean that Freud and Piaget believe that every individual will grow up to be healthy and

perceptive? In the same monograph, Parsons also analyzes the countries of the Counter-Reformation, specifically, how their less differentiated, more ascribed structures prevented them from capitalizing on the opportunities for development presented by the Renaissance, as western European nations were able to do (Parsons, 1971: 40-3, 49-54, 71-4). This does not sound like inevitable differentiation to me.

I would agree, however, that Parsons is often overly optimistic about the emergence of differentiated structures. One of the primary justifications for this optimism is his insistence that differentiation is produced by a system's need for "functional adaptation" to structured, long-term disequilibrium. Less optimistic than Parsons, I wonder whether a bureaucratic state, less differentiated from the legal and religious systems, might not be more adaptive, in many respects, than a democratic, more differentiated system. It was this question which prompted me to make one of the distinctions I emphasize in my article, namely, that an ideological commitment to individual emancipation has affected, and perhaps made less realistic, Parsons's understanding of the actual course which societal differentiation takes.

(4) Finally, I would certainly not argue that Parsons's theory is internally consistent, nor did I do so in my article (Alexander, 1978a:192-4). Like many other great theorists (see, for example, my discussion of Weber in Alexander, 1978b), Parsons's work is deeply ambiguous, about both formal and substantive issues. As I think I made clear, I wrote this article in order to emphasize the positive elements in Parsons's contribution.

Jeffrey C. Alexander
University of California, Los Angeles

REFERENCES

- Alexander, Jeffrey C.
1978a "Formal and substantive voluntarism in the work of Talcott Parsons: a theoretical and ideological reinterpretation." *American Sociological Review* 43:177-98.
1978b "Formal and substantive contradictions in the work of Max Weber." Paper given at the annual meeting of the American Sociological Association, San Francisco.
1980 *Theoretical Logic in Sociology*. 2 Vols. Berkeley: University of California Press.
Parsons, Talcott
1967 "Durkheim's contribution to the theory of the integration of social systems." Pp. 3-34 in Talcott Parsons (ed.), *Sociological Theory in Modern Society*. New York: Free Press.

- 1971 *The System of Modern Societies*. New York: Free Press.
- Parsons, T. and Edward Shils
 1951 "Values, motives, and systems of action." Pp. 47-278 in Talcott Parsons and Edward Shils (eds.), *Towards a General Theory of Action*. New York: Free Press.

1970 CENSUS FIGURES ON PUBLIC ASSISTANCE INCOME: SOME COMPARATIVE FIGURES FROM ALTERNATE SOURCES*

(COMMENT ON LONG, ASR FEBRUARY, 1974)

The conclusions drawn in the Long (1974) article about the propensity of black and white migrants to six large American cities (New York, Philadelphia, Chicago, Detroit, Los Angeles and Washington, D.C.) to be poor (cf. U.S. Bureau of the Census, 1973a:x, for definition) or to be receiving welfare during the year 1969 as compared with persons born in these cities, for the same year, were based on information obtained from the 1970 census.

In this connection, the writer wishes to mention two studies published in 1972 which reviewed data reported in the 1970 census on public assistance income, or welfare. The first is a RAND study entitled "Two Counts of Welfare in New York City: A Comparison of City and Census Data for 1969," by C. Peter Rydell (1972). This study, as its title indicates, compared official statistics published by the New York City (1969) Department of Social Services on the total number of welfare cases receiving assistance and total cash disbursements for the year 1969 with the same figures which were published in the 1970 census.

The study concluded that "the 1970 census of population underestimated the number of welfare cases and the amount of welfare income in New York City during 1969. In both instances the census estimate was essentially 40 percent below the city's estimate" (Rydell, 1972:7). The exact figures were a 41.1% underestimation of total cash grants and a 39% underestimation of total cases.

This study compensated for the different time frames used in the census statistics (yearly totals) and the city figures (monthly totals) and also for the fact that the census counted a single family which included two or more cases as a single case, while the city counted it as two or more cases. The latter

disparity was compensated for by preparing estimates of the duplication of cases in the census figures and adding this figure to the original census total.

The writer is not currently in possession of similar studies of official figures for other large cities as compared with those published in the 1970 census. The second study to be mentioned, however, "Preliminary Evaluation of 1969 Money Income Data Collected in the 1970 Census of Population and Housing," by Mitsuo Ono (1972), does provide information about money income statistics for each state in the Union, although not for individual cities. This study is referred to by the Census Bureau (1973a) in its introduction to the 1970 census subject report on "Low Income Areas in Large Cities." However, it is not referred to in the introduction to "Mobility for Metropolitan Areas" (1973b), wherein the statistics on which the Long paper is based are located. Also the studies' specific conclusions are not noted in the introduction where it is mentioned; however, it is given as a reference in which "estimates of income underreporting in the 1970 census" (U.S. Bureau of the Census, 1973a:xi) may be found.

The Ono study compares the aggregate incomes from various sources as reported in the 1970 census (wage or salary income, self-employment income, social security, public assistance income) with benchmark estimates of the same figures which have been compiled by the Bureau of Economic Analysis. The benchmark figures are independent estimates of the above income aggregates obtained by analysing "administrative data sources" (Ono, 1972:391). The Ono study does not indicate exactly what administrative sources were used; however, the Bureau of Economic Analysis (1976:35) itself in a later publication entitled "Local Area Personal Income, 1969-1974," states that its sources for information on public assistance during this period were based on county information on the amount of benefit payments made. The information was available annually from State Departments of Welfare and/or the National Center for Social Statistics of the U.S. Department of Health, Education and Welfare.

The benchmark figures for public assistance income in the 1970 census as reported in the Ono paper range from 55% for Iowa to 101% for Indiana. The average for the United States is 69%. The averages for the states where the cities mentioned in the Long article are located are: New York, 61%; Pennsylvania, 71%; Illinois, 69%; Michigan, 72%; California, 64%; and Washington, D.C., 73%.

* Address all communications to: Christopher B. Norton; 102 W. 80th St., Apt. 63; New York, NY 10024.

This study thus estimates that the 1970 census statistics for public assistance income varied from between 55% and 101% of their actual totals and averaged only 69% of the total for the country as a whole.

It would appear that the 41% underestimation indicated in the Rydell study would substantiate the 61% projection given in the Ono paper for New York State. Unfortunately, as indicated, the Rydell statistics covered only New York City while those in the Ono paper are for New York State as a whole.

If the 1970 census did underestimate American public assistance income by 69%, as the Ono study indicated, it probably underestimated the number of cases receiving public assistance also, as attested to by Rydell for New York City.

The question which the results of these two studies pose for the Long paper concern its conclusion that a larger number of black natives to the metropolitan areas mentioned above were on welfare during the period surveyed than black migrants to the areas. Would the statistics substantiate this conclusion if the analysis were made of the actual welfare population?

The percentage differences on which Long's (1974:49) conclusions about black welfare recipients were based were rather small and varied from 1 to 4.2%. If the balance of the welfare population not counted (assuming the census did undercount total welfare grants and number of cases) did have the same percentage of natives and migrants as those census respondents who answered questions on place of origin, the conclusions would remain the same. Since there does not appear to be any way of determining this, the writer feels that the Long article's conclusions about welfare recipients are not necessarily supported by census data.

One further question which presents itself concerning the census data is the advisability of asking questions of respondents about public assistance income if the accuracy of the responses is only 69%. Perhaps the procedure used in the last two census counts (1969 and 1970) of mailing questionnaires to families who complete them without supervision and then mail them back to the Bureau on census day (self-enumeration) should be revised so that better statistics are forthcoming.

Hopefully those preparing the 1980 census will utilize sampling procedures which will produce results that are not as open to question as those discussed here.

Christopher B. Norton
New York, New York

REFERENCES

- Bureau of Economic Analysis
1976 Local Area Personal Income, 1969-1974. Vol. 1, Summary. U.S. Department of Commerce. Springfield, Va.: National Technical Information Service.
- City of New York
1969 Monthly Statistical Report. New York: Department of Social Services.
- Long, Larry H.
1974 "Poverty status and receipt of welfare among migrants and non-migrants in large cities." *American Sociological Review* 39:46-56.
- Ono, Mitsuo
1972 "Preliminary evaluation of 1969 income data collected in the 1970 census of population and housing." *American Statistical Association, Proceedings of the Social Statistics Section*, Washington, D.C.
- Rydell, C. Peter
1972 *Two Counts of Welfare in New York City: A Comparison of City and Census Data for 1969*. New York: New York City Rand Institute.
- U.S. Bureau of the Census
1973a *Census of the Population: 1970. Subject Reports. PC(2)-9B, Low Income Areas in Large Cities*. Washington, D.C.: U. S. Government Printing Office.
1973b *Census of the Population: 1970. Subject Reports. PC(2)-2C, Mobility for Metropolitan Areas*. Washington, D.C.: U.S. Government Printing Office.

REPLY TO NORTON*

The main points of the preceding comment seem to be twofold and include: (1) the discovery that income was underreported in the 1970 census, and (2) the belief that income underreporting could be substantially reduced through personal interviews rather than the mail-out/mail-back technique used in the 1970 census. The first point is clear to anyone who has ever worked with census or survey data on income; the second point is questionable; and neither invalidates the conclusions I reached in "Poverty Status and Receipt of Welfare among Migrants and Nonmigrants in Large Cities" (Long, 1974).

In the ASR article I argued that during the 1960s black South-to-North migrants who had lived in northern cities for a few years were slightly less likely to be poor or on welfare than blacks who had grown up in these cities. This

* Address all communications to: Larry H. Long; U.S. Department of Commerce; Bureau of the Census; Washington, D.C. 20233.

conclusion contradicted some of the conventional wisdom which asserted that black migrants were more likely than black urban natives in the North to be on welfare either because they migrated in order to get welfare or they migrated for other reasons and were forced to rely on welfare as a result of inability to secure stable employment.

A later article published in *AJS* (Long and Heltman, 1975) sought to provide a fuller rationale to the ASR findings. The *AJS* article showed that black migrants who had lived for a few years in the North were more successful in escaping poverty and welfare dependence partly through higher rates of labor force participation. The migrants had taken lower status jobs but, in the aggregate, managed to earn slightly more than the urban natives because proportionately more of the migrants were working. The data presented in the two articles came from the 1970 census, which in urban areas was taken through the mail-out/mail-back technique thought by Norton to have biased the income statistics. Under this procedure, first used in the 1970 census, households in the sample were mailed a questionnaire, and if it was mailed back with complete answers by the due date, no interviewer would come by. If the questionnaire was not mailed back or if it was mailed back but was incompletely filled out, then an interviewer would be sent to the address. This procedure was adopted partly because of cost considerations and was thought to reduce interviewer bias.

The general validity of the picture sketched in the ASR and *AJS* articles does not depend simply on data from the 1970 census. Independent data sources have verified the higher income of the black South-to-North migrants during the 1960s or thereabouts. Weiss and Williamson (1972) analyzed the 1967 Survey of Economic Opportunity, a national sample sponsored by the Office of Economic Opportunity, and found higher incomes among the black South-to-North migrants than blacks of similar background characteristics but born in the North. A similar empirical result was reported by Hogan and Featherman (1977), who analyzed the 1973 Occupational Change in a Generation survey, a large nationwide sample. Using still another survey, the National Longitudinal (Parnes) Surveys, Adams and Nestel (1976) found that younger blacks who had moved from the South to the non-South in the 1960s or earlier had higher earnings than blacks of the same age but native to the non-South. Finally, using a special match of Social Security records and test scores of men taking the Armed Forces Qualifying Test, Cutright (1972; 1974) reported higher earnings in 1964 for black

migrants from the South than for black non-migrants in the non-South.

In addition, the 1960 census, which, contrary to Norton's belief, was not taken by the mail-out/mail-back technique, also indicated higher income and higher rates of labor force participation among the black South-to-North migrants than among blacks native to the North (Masters, 1972; 1975; Lieberman and Wilkinson; 1976). Altogether, the aforementioned studies come from five completely independent data sources, with data collection taking place in various years between 1960 and 1973. All found higher income or earnings, taking age and some background factors into account, for the black migrants from the South. All five data sources were from personal interviews, except for the Cutright (1972; 1974) studies, which used data from administrative records and therefore contained no sampling error. None of these data sources relied on mail-out/mail-back techniques.

Despite some differences in definitions of variables, the consistency of findings among independent studies presents overwhelming evidence as to the basic correctness of the empirical facts regarding the relative income position of black migrants from the South vis-à-vis black northern nonmigrants during the 1960s. The higher income and higher labor force participation on the part of the migrants who had lived in the North for a few years certainly implies less need for welfare. It is important to note, however, that recent migrants generally experienced more unemployment, lower income, and greater dependence on welfare than the long-term migrants (Long, 1974; Long and Heltman, 1975). Return migration seems not to account for this difference between recent and long-term migrants (Long and Hansen, 1977), suggesting that the migrants initially experienced some unemployment and low earnings before going on to surpass the earnings of the urban nonmigrants.

If the South-to-North black migrants (at least those who had lived in the North for a few years) had less apparent need for welfare because of higher income vis-à-vis the urban natives and if the migrants' higher income resulted from higher labor force participation, the more basic question boils down to this: Why did the migrants have higher labor force participation? The answer, again coming from several completely independent sources, appears in substantial part to involve differences between the migrant and nonmigrant groups in job expectations and attitudes toward work and welfare. In somewhat oversimplified terms, the answer seems to involve the migrants having lower expectations regarding

satisfactory working conditions, their emphasis on the pecuniary aspects of a job (rather than nonpecuniary aspects like enjoying the work, having pleasant coworkers, etc.), and having less knowledge of the alternatives to work (see Adams and Nestel, 1976; Koziara and Koziara, 1968; Northrup, 1968). The general thrust of these and other studies was to point out some of the disadvantages that can accrue to blacks as a result of reaching adulthood in northern ghetto areas and how work attitudes of black migrants during this time allowed them to overcome some of the traditional handicaps of southern birth.

These studies brought about some fundamental rethinking concerning the sources of inequality between blacks and whites in northern cities and the causes of urban problems in the North. Prior to the publication of the studies cited above, black South-to-North migration was thought to be a dominant explanation of both the large socioeconomic difference between blacks and whites in the North and the source of many urban problems like crime, unemployment, and welfare dependence. Perhaps Banfield (1968; 1972) was the most widely publicized proponent of the theory that black South-to-North migration could largely account for black-white income differences and many urban problems in the North.

The interweaving of results reported by different researchers using different data sources produces a reasonably consistent picture of black migrant/nonmigrant differences in the North in the 1960s. The census, of course, had income underreporting, and the best discussion of this and other sources of error affecting comparison of income differences between migrant and nonmigrant blacks in the North in 1970 can be found in Lieberman (1978). Taken in context, however, the 1970 census results on the socioeconomic position of black migrants and northern nonmigrants agree with other data in their broad description of the situation.

One should avoid generalizing the results for the 1960s to earlier periods or to the future. In earlier periods, it is extremely doubtful that the black South-to-North migrants could overcome their educational handicaps so as to match or exceed the northern nonmigrants in earnings. But by the 1960s the educational level of black South-to-North migrants was nearly equal to that of blacks native to the urban North (Long and Heltman, 1975), and under such circumstances other factors like attitudes toward work and welfare began to loom more important in differentiating migrant and nonmigrant northern blacks.

Since 1970 fewer blacks have been moving

North, and more have been leaving the region to go South. In fact, the North now has net outmigration of blacks—a striking change from the 1960s (U. S. Bureau of the Census, 1978). A significant question to be investigated with data from the 1980 census is how successful the northern-born have been in competing with the southern-born for the expanding number of jobs in the South.

Larry H. Long
U.S. Bureau of the Census

REFERENCES

- Adams, Arvil V. and Gilbert Nestel
1976 "Interregional migration, education, and poverty in the urban ghetto: another look at black-white earnings differentials." *Review of Economics and Statistics* 58:156-66.
- Banfield, Edward C.
1968 *The Unheavenly City: The Nature and Future of Our Urban Crisis*. Boston: Little, Brown.
1972 *The Unheavenly City Revisited*. Boston: Little, Brown.
- Cutright, Phillips
1972 *Achievement, Mobility, and the Draft: Their Impact on the Earnings of Men*. Washington, D. C.: U. S. Department of Health, Education, and Welfare.
- 1974 "Region, migration and the earnings of white and black men." *Social Forces* 53:297-305.
- Hogan, Dennis P. and David L. Featherman
1977 "Racial stratification and socioeconomic change in the American North and South." *American Journal of Sociology* 83:100-26.
- Koziara, Edward C. and Karen S. Koziara
1968 *The Negro in the Hotel Industry*. Philadelphia: University of Pennsylvania Press.
- Lieberman, Stanley
1978 "A reconsideration of the income differences found between migrants and northern-born blacks." *American Journal of Sociology* 83:940-66.
- Lieberman, Stanley and Christy A. Wilkinson
1976 "A comparison between northern and southern blacks residing in the North." *Demography* 13:199-224.
- Long, Larry H.
1974 "Poverty status and receipt of welfare among migrants and nonmigrants in large cities." *American Sociological Review* 39:46-56.
- Long, Larry H. and Kristin A. Hansen
1977 "Selectivity of black return migration to the South." *Rural Sociology* 42:317-31.
- Long, Larry H. and Lynne R. Heltman
1975 "Migration and income differences between black and white men in the North." *American Journal of Sociology* 80:1391-1409.

- Masters, Stanley H.
 1972 "Are black migrants from the South to northern cities worse off than blacks already there?" *Journal of Human Resources* 8:411-23.
 1975 *Black-White Income Differentials*. New York: Academic Press.
- Northrup, Herbert R.
 1968 *The Negro in the Automobile Industry*. Philadelphia: University of Pennsylvania Press.
- U. S. Bureau of the Census
 1978 "Geographical mobility: March 1975 to March 1977." *Current Population Reports*, Se. P-20, No. 320. Washington, D. C.: U. S. Government Printing Office.
- Weiss, Leonard and Jeffrey G. Williamson
 1972 "Black education, earnings, and interregional migration: some new evidence." *American Economic Review* 62:372-83.

THE "ECOLOGICAL APPROACH" AND COMMUNITY LEADERSHIP

(REPLY TO LINCOLN AND OLSON, ASR
 FEBRUARY, 1978)*

Lincoln and Olson (1978) have organized an array of mainly minor or contrived issues around three more general criticisms of our (Grimes et al., 1976) study of community structure and leadership arrangements. Reacting to each *specific* criticism would involve the reader in much nitpicking and more time and space than most of the issues warrant.

Their first concern is with our use of the term *ecological* and the criteria we used to make our evaluation. They suggest that our approach is not ecological because it "bears little relation to ecological theory" (p. 112, emphasis ours). In fact, we took pains when writing the article to avoid the use of the term theory because no valid theory of adequate scope can be found in the community leadership literature. This has been noted by others (e.g., Walton, 1970; Warren, 1977) and may be inferred from Lincoln and Olson's reliance on two citations to a single theory which has received no little amount of criticism (e.g., Straits, 1965; Williams, 1973). We made no claims to introduce or test a *theory*, but our hypotheses were easily related to that extant body of community leadership literature which can be readily recognized by Lincoln, Olson and anyone else researching the topic when the term *ecological* is used. Accepting their very narrow definition of ecological would exclude significant works

ranging from some of the Chicago school classics (e.g., Zorbaugh, 1929) to recent research such as that subsumed under the currently accepted label of factorial ecology (e.g., Rees, 1971).

Our evaluation of the ecological hypotheses is criticized on the same page (p. 113) for, first, having an "exaggerated concern with the magnitude of R^2 " and, second, for expressing "disappointment in the R^2 's—although these, which range up to .43 are not trifling by prevailing standards." Something is awry here. Either R^2 is a valid indicator of importance or it isn't. We believe that it is and that there is more to the story than Lincoln and Olson mention in their comment: our data showed a *lack of consistency* in the R^2 's across the different measures of the dependent variable and some of the relationships were opposite to those predicted by an examination of the previous literature.

A second concern is with our multidimensional conceptualization of leadership and the manner in which it was used. Here, as elsewhere, Lincoln and Olson extract a minor example (the degree to which democracy and pluralism overlap) rather than a major point (e.g., the relative merits of multidimensional vs. unidimensional conceptualizations), make unwarranted assumptions (e.g., that the latter is dependent upon the former), and overlook those sections of our text which explicitly answer some of the questions they raise (e.g., measures of all four leadership dimensions were not used on a single sample of communities because "[r]egrettably such a data set, to our knowledge, does not yet exist," (Grimes et al., 1976:713). We were also chided for not presenting the zero-order correlation coefficient for the association between the legitimacy and visibility dimensions. The R^2 happens to be .42, which neither adds to nor takes away from our conclusions. In the context of the criticism, should it be regarded as more than "trifling" by prevailing standards (p. 113) or would this be an "exaggerated concern" (p. 113)? Finally, it was suggested that the most rigorous approach would have been to "treat leadership structure as an unobserved construct" (p. 114). Lincoln (1976) tried this himself and thus he should know why we avoided it. It demands specific theory about causal ordering and this is sadly lacking in the relevant literature.

Finally, several criticisms are offered concerning the means by which we derived the community structural variables in our analysis. We employed factor analysis as a data reduction technique—no more, no less. As such, it was successful in organizing the various indi-

* Address all communications to: Charles M. Bon-
 jean; Department of Sociology; University of Texas;
 Austin, TX 78712.

cators of community structure used by others. Moreover, the initial variables—and thus the factors—were representative of the extant demographic data available for communities from standard sources (Bonjean et al., 1969). That the original analysis was performed on counties was a necessary compromise to achieve sufficient scope and simultaneously to include cities of less than 25,000 in the universe. That it probably makes little difference whether counties, cities or some other boundary is used has been noted by investigators who have compared the findings from such analyses (e.g., Bonjean, 1971; Foley, 1977). Such comparisons also reveal that the removal of a few variables (e.g., the budgetary data) fails to influence the emergence of most of the factors identified.

In short, some of Lincoln and Olson's criticisms are of exaggerated points taken out of context. Others can be resolved by examining the references cited in our article. Most disappointing, however, is the failure of their criticisms or the comment in general to offer constructive suggestions for the improvement of research on community structure and leadership arrangements.

Charles M. Bonjean
The University of Texas at Austin
Michael D. Grimes
Louisiana State University
Robert L. Lineberry
Northwestern University
J. Larry Lyon
Baylor University

REFERENCES

- Bonjean, Charles M.
1971 "The community as a research site and object of inquiry." Pp. 5-15 in Charles M. Bonjean, Terry N. Clark, and Robert L. Lineberry (eds.), *Community Politics: A Behavioral Approach*. New York: Free Press.
- Bonjean, Charles M., Harley Browning and Lewis Carter
1969 "Toward comparative community research: a factor analysis of United States counties." *The Sociological Quarterly* 10:157-76.
- Foley, John W.
1977 "Toward a taxonomy of the dimensions of community social structure: an application and comparison of different scale techniques over time." *Public Data Use* 5:29-41.
- Grimes, Michael D., Charles M. Bonjean, J. Larry Lyon and Robert L. Lineberry
1976 "Community structure and leadership arrangements: a multidimensional analysis." *American Sociological Review* 41:706-25.
- Lincoln, James R.
1976 "Power and mobilization in the urban community: reconsidering the ecological approach." *American Sociological Review* 41:1-15.
- Lincoln, James R., and Jon Olson
1978 "The 'ecological approach' and community leadership: comment on Grimes, Bonjean, Lyon and Lineberry." *American Sociological Review* 43:112-4.
- Rees, Philip H.
1971 "Factorial ecology: an extended definition, survey and critique of the field." *Economic Geography* 47:220-33.
- Straits, Bruce C.
1965 "Community adoption and implementation of urban renewal." *American Journal of Sociology* 71:590-613.
- Walton, John
1970 "A systematic survey of community power research." Pp. 443-64 in Michael Aiken and Paul E. Mott (eds.), *The Structure of Community Power*. New York: Random House.
- Warren, Roland
1977 "Power in the community." Pp. 366-8 in Roland Warren (ed.), *New Perspectives on the American Community*. Chicago: Rand McNally.
- Williams, James M.
1973 "The ecological approach in measuring community power concentration: an analysis of Hawley's MPO ratio." *American Sociological Review* 38:230-42.
- Zorbaugh, Harvey W.
1929 *The Gold Coast and the Slum*. Chicago: University of Chicago Press.

ITEMS (Continued)

search activities include studies of decision making in the criminal justice process and studies of victims of personal crimes. With Michael Hindelang and James Garofalo, he has coauthored *Victims of Personal Crime: An Empirical Foundation for a Theory of Personal Victimization*. (Ballinger, 1978). **MICHAEL J. HINDELANG** is Professor in the School of Criminal Justice, State University of New York at Albany. Currently he is involved in studies of self-reported delinquency methodology, the utility and limitations of various criminal justice statistical data, and victims of crimes. In addition to his work with Gottfredson and Garofalo, he has authored *Criminal Victimization in Eight American Cities* (Ballinger, 1976).

■ **DONALD BLACK** (Comment: Common Sense in the Sociology of Law) is Associate Professor in the Department of Sociology at Yale University. He is doing cross-cultural and historical studies of dispute settlement. He is author of two forthcoming books, *Studies on the Police* and *Toward a General Theory of Social Control* (Academic Press).

■ **ROBERT V. ROBINSON** (Class as Conceived by Marx and Dahrendorf) is Lecturer and Ph.D. Candidate in the Department of Sociology at Yale University. His research focuses on rationales for and perceptions of inequality in England and the United States. His dissertation is a ten-nation study of determinants and consequences of control of the means of production and authority. **JONATHAN KELLEY** is Senior Research Fellow in the Institute of Advanced Studies, The Australian National University. He also is Lecturer in the Department of Sociology at UCLA. He is working on a comparative analysis of social mobility. Recently he completed a monograph entitled *Revolution and the Rebirth of Inequality: The Bolivian Revolution* (coauthored with Herbert S. Klein).

■ **J. ALLEN WHITT** (Toward a Class-Dialectical Model of Power) is Visiting Assistant Professor in the Department of City and Regional Planning, Cornell University. He also has an appointment in the Sociology Department at Brown University. He is doing research on the political and social implications of corporate interlocking directorates and elite social networks.

■ **JILL S. QUADAGNO** (Paradigms in Evolutionary Theory) is Assistant Professor of Sociology at the University of Kansas. She is working on an investigation of the social and economic conditions concerning poverty among the rural aged (in collaboration with Scott G. McNall).

■ **PATRICK D. NOLAN** (Size and Administrative Intensity in Nations) is Assistant Professor at the Pennsylvania State University, Schuylkill Haven.

He is interested in macrostructural research on the effects of the political economy of the world system on the relative size of police and governmental subsystems.

■ **WALTER R. GOVE** (Overcrowding in the Home; Possible Causes of the Apparent Sex Differences in Physical Health) is Professor in the Department of Sociology and Anthropology at Vanderbilt University. His Research interests center on mental illness, sex and marital roles, crime, aging, drug use, and the effects of crowding and isolation on human behavior. **MICHAEL HUGHES** is a Ph.D. Candidate in the Department of Sociology and Anthropology at Vanderbilt University. He is studying mental hospitalization. His dissertation is on living alone and mental well-being in the United States. **OMER R. GALLE** (Overcrowding in the Home) is Associate Professor of Sociology and Director of the Population Research Center at the University of Texas, Austin. His research focuses on developing a comprehensive measure of system change, the relations between migration and age structure as it relates to traditional models of migration and further explorations in the area of crowding and behavior.

■ **RICHARD A. SMITH** (Decision Making and Non-Decision Making in Cities) is Associate Professor in the Department of Urban and Regional Planning, Florida State University. His research interests cover the areas of community structure and policy outputs, housing discrimination and segregation and the social impacts of public policy. Currently he is beginning a study of the social impact assessment processes in Great Britain.

■ **GAIL LANDSMAN** (Comment on Carroll, ASR June, 1975) is a graduate student in the Ph. D. program in sociology at the Catholic University of America.

■ **STEVEN STACK** (Comment on Hewitt, ASR June, 1977) is Assistant Professor of Sociology at Alma College. Currently he is working on cross-national studies of suicide. He also is investigating the relationship between unemployment rates and crime rates.

■ **WALTER L. GOLDFRANK** (Comment on Appelbaum, ASR February, 1978) is Associate Professor of Sociology at the University of California, Santa Cruz. He is studying social change in the period between the two world wars.

■ **JOHN W. HEEREN** (Comment on Alexander, ASR April, 1978) is Associate Professor at California State College, San Bernardino. His research centers on schools in contemporary American sociology.

Published by the American Sociological Association

Recent issues contain reports on:

**JOHN HARKEY, DAVID L.
MILES, AND
WILLIAM A. RUSHING**

**The Relation between Social Class
and Functional Status: A New
Look at the Drift Hypothesis**

**ALAN BOOTH AND
JOHN COWELL**

Crowding and Health

ROSE LAUB COSER

**Suicide and the Relational System:
A Case Study in a Mental Hospital**

LOIS VERBRUGGE

**Females and Illness: Recent Trends
in Sex Differences in the United
States**

**RICHARD TESSLER, DAVID
MECHANIC, AND MARGARET
DIMOND**

**The Effect of Psychological Distress
on Physician Utilization**

RUSSELL A. WARD

**Services for Older People: An Inte-
grated Framework for Research**

\$16 per year for libraries and institutions; \$8 per year for ASA members;

\$12 per year for all other individuals

**Concerning subscriptions, address the Executive Office, American Sociological
Association, 1722 N Street, N.W., Washington, D.C. 20036.**

ISSN 0022-1465

JOURNAL OF HEALTH & SOCIAL BEHAVIOR

AMERICAN SOCIOLOGICAL REVIEW

THE FOUNDING OF THE *AMERICAN SOCIOLOGICAL REVIEW*: THE ANATOMY OF A REBELLION*

PATRICIA MADOO LENGERMANN

George Washington University

American Sociological Review 1979, Vol. 44 (April):185-198

The establishment of the *ASR* in 1935 conventionally is seen as a rebellion against the influence of the Chicago School on the profession. Drawing on hitherto untapped archival materials, this paper attempts to resolve an ongoing controversy about the sources of this rebellion. It outlines the events in the rebellion, identifies the protagonists in the conflict, and describes the reasons for conflict. The rebellion was led by "association" men, rebelling against a variety of elitist trends in the professional community. The event occurred in the context of a variety of practical stresses resulting from the Depression. My account of this episode is related to a contemporary debate in the sociology of science about the nature of scientific change.

Most commentators agree that the history of American sociology during the first third of this century is inseparable from that of the department of Sociology at the University of Chicago, the so-called Chicago School (Coser, 1977; Gouldner, 1970; Hinkle and Hinkle, 1954; Martindale, 1960). Nothing better symbolizes this interdependence than the fact that Chicago's journal, *The American Journal of Sociology* (*AJS*), functioned as the official journal of the American Sociological Society (ASS) until 1936, giving the Chicago department extraordinary centrality in professional communication. During the thirties, however, the American sociological community was turbulent with conflict and hostility, much of it directed towards Chicago and to the issue of its influence in the profession. This hostility came to a head in 1935 when the ASS

voted to establish an independent journal for the Society, the *American Sociological Review* (*ASR*). The decision to disestablish the *AJS* was construed both by contemporaries and by later commentators as a rebellion against Chicago.¹ In turn this rebellion is treated both as symbol and cause of Chicago's loss of professional centrality, which dates from about this time (Bernard, 1973; Coser, 1977; Faris, 1967; Kuklick, 1973; Martindale, 1976; Odum, 1951).

Apart from this agreement, however, details on the rebellion are few, and interpretations of its causes and outcomes varied and confusing. This confusion is demonstrated in the conflicts among three well-known versions of the incident.

¹ Interviews with Leonard Cottrell and Peter Lejins. Also supporting this view of the episode as an antagonistic act against Chicago is the well-known statement of the rebels' leader L. L. Bernard:

I . . . appointed the committee which recommended the substitution of the *American Sociological Review* for the *American Journal of Sociology* and pushed the resolution through to its adoption. . . . I took these steps because the department of sociology at the University of Chicago under its leader at the time had become arrogant and was suspected of making the interests of the American Sociological Society subsidiary to those of the Chicago department. (Odum, 1951:410)

* Address all communications to: Patricia Madoo Lengermann; Department of Sociology; George Washington University; Washington, D.C., 20052.

Research for this paper was supported by a National Endowment for the Humanities Summer Research Fellowship (1976) and by a Post-Doctoral Fellowship from the American Association of University Women (1976-1977). I wish to thank Dr. Jessie Bernard for first pointing me in the direction of the L.L. Bernard papers, and Dr. Herbert Blumer for his detailed comments on an earlier draft of this paper.

1. Faris (1967) argues that the rebellion was the work of an activist faction, politicized and socially involved, who challenged Chicago's stand on scientific detachment and value neutrality. This prompted a counterrebellion by Chicago and its allies, embodied in the founding of the Sociological Research Association (SRA), "a fortress to which the objective scholar might retreat . . ." (Faris, 1967:121-2).²

2. Martindale (1976) describes the rebellion as the work of a band of "Young Turks" spearheading the quantification movement and radically positivist in orientation, who rebelled under the banner of scientific objectivity against Chicago's broad, humanistic outlook. Martindale credits this group with the founding both of the ASR and the SRA, and treats their hard-nosed scientism as "a response to the economic crisis" of the thirties. (Martindale, 1976:71-4).³

3. Kuklick (1973) relates the rebellion to a broader pattern of theoretical reorientation during which theoretical influence shifted from Chicago sociology to the structural-functionalist perspective centered at Harvard and Columbia. The rebels were younger men, often "products of new sociology departments . . . not schooled in deference to Chicago" (Kuklick, 1973:3). Although they held no systematically articulated theory at the time of the rebellion, the elements of this were already apparent and would soon coalesce into structural-functionalism. Like Faris, Kuklick treats the SRA as a counterrebellion by Chicago, but an ineffectual one.⁴

This paper brings new data to bear on this argument. These data come primarily from the collection of L.L. Bernard's papers in the archives of the Pennsylvania

State University. Bernard is acknowledged by most sources as the leader of the rebellion against the AJS (Bernard, 1973; Barnes, 1968; Kuklick, 1973; Odum, 1951; interviews with Herbert Blumer, Leonard Cottrell, Everett C. Hughes, Helen McGill Hughes). I also draw on interviews and correspondence with people who were professionally active in the thirties, and on published accounts and records of the profession in that decade.

This report is intended primarily as an historical account, a description and analysis of a concrete sequence of events which has had an immediate shaping effect on the contemporary experience of American sociologists. The literature referred to so far illustrates the persistent curiosity in the profession about this episode. The main part of this paper: (i) outlines the chief events in the rebellion; (ii) identifies the combatants; (iii) describes the issues which drove them to conflict; (iv) assesses the consequences of the rebellion.

A second aim of this paper is to relate the data on the founding of the ASR to an issue of contemporary theoretical relevance: the three-way debate among sociologists of science about the nature and sources of scientific change (Lengermann, 1978). Table 1 summarizes the main features of this controversy. Broadly speaking the argument centers on three views of science: the developmentalist view, which sees any science as a system of roles and norms; the Kuhnian view, which sees any science as a community sharing a distinctive paradigm; and the critical conflict view which treats any science as a professional group embedded within the wider political economy. The first two groups explain scientific change primarily in terms of processes intrinsic to the scientific group. For developmentalists, these processes are growth, differentiation and institutionalization; for Kuhnians, these processes are paradigmatic transformation and intragroup conflict. Critical conflict theorists argue that scientific change, though mediated by intragroup conflict, is caused primarily by processes extrinsic to the scientific group, specifically societal level changes in economy, class and ideology.

² Faris (1967:121) identifies the rebels as people who seemed to be "turning away from . . . traditional scholarly research . . . towards an active participation in national political and social controversy."

³ Martindale (1976:72-3) identifies the Young Turks as "restive young scholars" like George Lundberg, Donald Young, S. A. Stouffer, R. S. Lynd, Kimball Young, and F. Stuart Chapin.

⁴ Kuklick (1973:8) dismisses the quantifiers on whom Martindale focuses as "merely polemical" without "revolutionary consequences for American sociology."

Table 1. The Nature and Sources of Change in Contemporary Science:^a Three Approaches

The Issues	The Perspectives		
	Development	Kuhnian	Critical-Conflict
1. Illustrative writings ^b	Merton (1968), Parsons (1954), Ben-David (1970), Shils (1970)	Kuhn (1970), Hagstrom (1965), De Solla Price (1963), Friedrichs (1970)	Lukacs (1971), Gouldner (1970), McAulay (1978)
2. View of any science, as a social enterprise	A social system of roles and norms	A community of persons sharing a common identity and outlook, bound together by communication	An internally stratified professional group; a sector of the dominant class, located in a larger system of power, privilege and ideology
3. View of any science, as a body of ideas	Objective knowledge, theoretically formulated and empirically grounded	Interpretive systems, metaphors, paradigms	Substructures of ideology, superstructures of formal theory
4. Relation of (2) and (3)	Emphasis on (3)	Equal emphasis on (2) and (3)	Emphasis on (2)
5. Causes of change	Differentiation of the social system → logical-experimental advances in scientific investigation → convergences of ideas	Anomalies (tensions between theory and observation) → theoretical innovation → intra-community conflict and power struggle	Structural-ideological changes in society → intraprofessional power shifts
6. Outcome of change	Accumulation, sophistication, progress of knowledge	Outlook transformation, new norms for selecting and investigation problems	New relationship to society's power and ideological structures; change in science's potential for rational and critical knowledge
7. Distinctive features of the approach	Emphasis on idea continuity	Emphasis on idea transformation, incommensurability	Emphasis on the normative/ideological content of science
8. Guiding metaphor	The flowing stream	Political-religious revolutions	Marx's model of social organizations

^a Note the emphasis on *contemporary science*. These distinctions do not hold for views on the origins of science.

^b Since I am describing broad perspective, rather than close-knit "schools," the fit between these writings and these three perspectives is loose-knit rather than tight.

The various interpretations of the founding of the ASR reflect some of these more general differences in viewpoint. Faris relates both the causes and consequences of the episode to growth and differentiation within the profession. Kulkick works explicitly with themes of paradigm transformation and intragroup conflict. Martindale is less easy to type. His mention of sociology's response to the Depression brings in extrinsic factors which fit in with the critical conflict viewpoint, but his focus is on the confrontation between qualitative and quantitative methodologies, that is, on paradigm change. The last section of this paper attempts to evaluate the three general view-

points on scientific change explored in Table 1 in the light of the data presented in the main portion of this paper.

The Rebellion

The climax of the confrontation with Chicago and its journal occurred in the last week of December 1935 at the annual meeting of the ASS in New York City.⁵ The Society's Committee on Publications, chaired by W. P. Meroney of Baylor University, presented a proposal to the Soci-

⁵ Data in this paragraph and the next comes from the letter of Jerome Davis to Bernard, December 31, 1935.

ety's Executive Committee to establish the *ASR* as the official publication of the Society. Here the proposal, encountering strong opposition, was voted down 5:4. While my sources do not give a precise breakdown of the vote they identify William Ogburn and Herbert Blumer, both of Chicago, as major opponents of the proposal, and Jerome Davis of Yale as the chief fighter for it. The proposal then went as a minority report to the general membership at the business meeting. It was approved by a vote of approximately 2:1.

The rejection of Chicago went further. Hitherto the administration of the Society's affairs had been based at Chicago, and a member of that department had always served as secretary-treasurer of the Society. At the 1935 business meeting the membership approved the establishment of an independent executive office for the Society and elected a non-Chicagoan, Harold Phelps of Pittsburgh, secretary of the Society. A rebel sympathizer, F. H. Hankins of Smith College, was elected editor of the *ASR*, a second, H. P. Fairchild of New York University, was elected president of the Society. Stuart Rice, Chicago's candidate, withdrew his nomination in the expectation of humiliating defeat. Both elected vice-presidents were sympathizers with the anti-Chicago move, as were two of the six elected members of the Executive Committee. Two other elected executive committee members, Meroney and Davis, were prime movers in the rebellion. Only one elected committee member, Dorothy Thomas, an Ogburn loyalist, clearly can be linked to the Chicago cause.⁶ The rebels had effected significant organizational changes against Chicago, and had made an almost complete sweep of elected executive offices.

The confrontation at the 1935 meetings however does not constitute "the rebel-

lion against Chicago." At best it is the most striking episode in a five-year chronicle of sustained oppositional politics to Chicago by the anti-*AJS* rebels. The chief details of this are summarized in the Appendix. As shown here, the rebellion falls into three phases. The first (1931-1932) begins with the Parmelee letters (November 1931), and runs through the year of Bernard's presidency (1932) to the establishment of handpicked rebel committees on the issue of the *AJS* and on constitutional reform in the Society (December 1932). The second (1933-1934) is a period of rebel ineffectiveness and disorganization, and of effective counteraction by Chicago and its supporters. The third (1935), a time of renewed mobilization by the rebels, culminates in the confrontation at the December meetings.

Throughout the period, the focus of rebel attention is on Chicago's control of the Society. This they attack on a variety of fronts: in power struggles over the election of the Society's president, suggestions for reform of electoral rules, attempts to control the membership of both standing and special committees, suggestions for reorganization of the executive structure of the Society, and criticism of Chicago's influence on official publications of the Society. A degree of electoral reform is pushed through in 1933; administrative and publication changes are made in 1935. An important second issue for the rebels throughout the period is the question of what constitutes sound scientific research in sociology, how standards for this are to be set, and the relationship between this and the flow of research money into the profession.⁷ The questions of Chicago's centrality and of the criteria for scientific work are closely linked in the minds of the rebels. The implications of this linkage will be explored later.

The Combatants

Figure 1 shows the main groups in the 1931-1935 conflict. Certain char-

⁶ Elected vice-presidents were D. Sanderson of Cornell and Kolb of Wisconsin; the rebel sympathizers elected to the Executive Committee were J. Bosard of Pennsylvania and J. O. Hertzler of Nebraska. The sixth elected member of the committee, J. F. Steiner of Wisconsin, was probably also sympathetic to the rebels (Blumer in my interviews indicated that Wisconsin was on the whole hostile to Chicago's role in the Society).

⁷ For example, see Elmer to Bernard, March 3, 1932; Smith to Bernard; April 4, 1932; Floyd House to Bernard, April 6, 1932; Bernard to Davis, February 10, 1934.

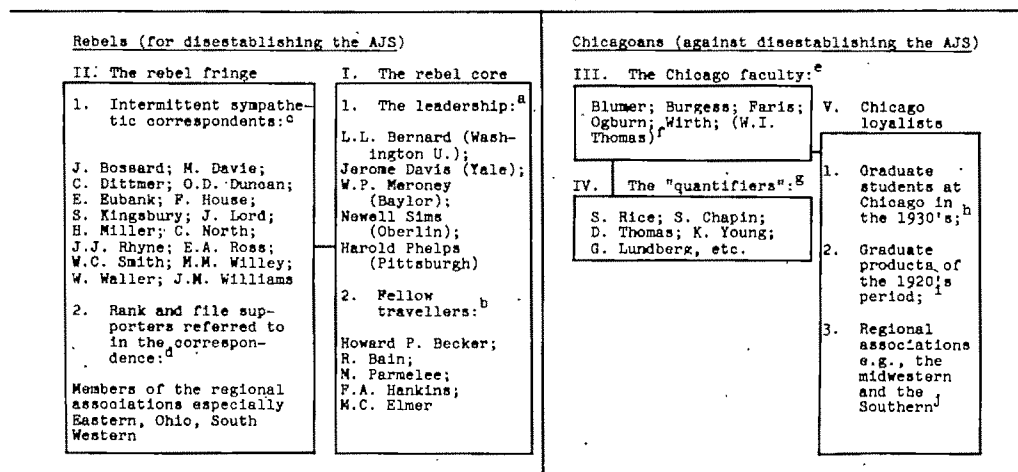


Figure 1. The Protagonists

^afor example: Meroney to Bernard, 1-21-32, 1-14-33; Davis to Bernard, many letters 6-33-11-33, Davis to Bernard, 1-2-34, 12-31-55; Sims to Bernard, 3-6-33, 3-20-33; Bernard to Meroney, 11-14-35; Bernard to Sims, 5-7-35; Report of the Committee to Consider a Plan for Control of the Official Journal, 12-33.

^bfor example: Elmer to Bernard, 3-9-32; Parmelee to Bernard, 3-21-32; Bain to Bernard, 3-23-32, 4-14-33; Becker to Bernard, 10-5-32; Bernard to Sims, 3-7-35; Sims to Bernard, 6-7-35.

^cfor example: Dittmer to Bernard, 3-25-32; Eubank to Bernard, 3-26-32; Pritchett to Bernard, 3-29-32; House to Bernard, 4-6-32; O.D. Duncan to Bernard, 4-29-32; Williams to Bernard, 9-1-32; and a great deal of the 1935 correspondence.

^dfor example: Dittmer to Bernard, 2-27-32; Elmer to Bernard, 3-7-32; Dittmer to Bernard, 3-8-32; Phelps to Bernard, 3-7-32; Sims to Ber-

nard, 4-12-32; Minutes of 4-16-32 meeting of S.W. Sociological Society; Bossard to Bernard, 7-30-34.

^efor example: Bernard to Elmer, 4-28-32; to Wirth, 5-7-32, to Burgess, 11-8-32, to Meroney, 11-14-35; Meroney to Faris, 2-16-35, to Bernard, 10-24-35; Blumer to Bernard, 4-14-32, 2-3-34, 6-22-34.

^fW. I. Thomas had not been at Chicago since 1918, but was regarded by the rebels as an active member of the Chicago-quantification coalition, e.g., Bernard to Sims, 1-9-32, 2-10-34.

^gfor example: Rice to Sims, 4-14-32; Bernard to Davis, 1934 undated; Chapin to Bernard, 1-25-35, 2-20-35; Sims to Bernard, 3-16-35, 4-8-35; Parmelee to Bernard, 4-8-35.

^hInterviews with Leonard Cottrell, Leland deViney, Peter Lejins.

ⁱe.g., R. McKenzie (interview with H. Blumer)

^jInterview with H. Blumer (on midwestern assn.); Parmelee to Bernard, 4-8-35 (on southern assn.)

acteristics of each group deserve comment.

1. *The rebel leadership.* A small group, linked by years of collaborative political maneuvering, mounted the organized challenge to Chicago's associational centrality. Of these Bernard, Davis, Meroney, Sims and Phelps form the core group, a close-knit alliance. Bain, Parmelee, Becker, Elmer and Hankins, maintaining some distance from this central group, shared its hostility towards Chicago. On occasion they contributed to the formulation of strategy, but at other times they went their own way.

The characteristics of this group do not match those attributed to the AJS rebels by Kuklick, Martindale or Faris. Six of the ten men were over fifty in 1935, and

four had their highest degrees from Chicago⁸ in contrast to Kuklick's assertions. Their correspondence shows that they were not acting as a theory group, and none of the groups' members can be linked closely either to structural-functionalism (Kuklick) or to the quantification movement (Martindale). Despite Faris's claims, the group's members seem to have avoided social and political activism.⁹

⁸ Men over fifty, Bernard, Sims, Bain, Parmelee, Hankins, Elmer; Chicago products, Bernard, Meroney, Elmer, Becker.

⁹ Here, for example, is Bernard's position:

I believe no one could be more interested in making sociology of use to society, but . . . it seems to me much better to try to produce content to sociology and to orient ourselves with regard to

Most of the group's members had established professional reputations and long records of service in both the regional and the national organizations of sociologists.¹⁰ It makes no sense to see them as pursuing professional recognition or an associational niche by means of the rebellion.¹¹ It is important however to see them as "association men." This point is taken up later.

2. *The rebel fringe.* A large unorganized population, supporting the political maneuvers of the rebel leaders, fed them complaints and suggestions, and backed them on occasion in committee votes or in votes at the general business meetings of the Society. This population was strategic in the rebellion. Without its votes the leadership's action would have been ineffective.

Some of the members of this group are linked to the leadership by intermittent correspondence, but the larger part of these supporters can be known only indirectly by references to them in the correspondence and in my interview material. These data indicate first that discontent with Chicago's influence was spontaneous in this population; it was not simply created by actions of the leadership.¹² Second, this diffuse opposition did not share any particular theoretical outlook. It however was agitated and divided by

theoretical issues.¹³ Third, opposition was stronger in certain regions of the country than others, and was particularly strong in the Southwest and in the powerful eastern community.¹⁴ This opposition often found expression in the new regional associations which appeared in the thirties (Pease and Hetrick, 1977). The size of the vote for the rebels at the crucial 1935 meetings reflects the location of those meetings in New York City.

3. *The Chicagoans.* The organized opposition to Bernard's group is referred to in this paper as *Chicagoans*. In part this reflects the rebels' own sense of their protagonists as a single conspiratorial group whom they called "Chicago," "the Chicago group," "the Chicago machine." But close analysis of the content and authorship of the correspondence shows that political resistance to the rebels rested on a coalition between two groups. The first is the Chicago faculty, notably Faris, Wirth, Burgess, Blumer, and Ogburn, who closed ranks in defense of their department's long-standing position in the ASS. The second group contains most of Martindale's Young Turks: Rice, Chapin, Lundberg, Kimball Young, and Dorothy Thomas.¹⁵ Members of both groups held important executive positions in the Society during the period,¹⁶ and their actions

our problems of research than it would be to attempt to be useful to a group of men who are dominated by a viewpoint that is almost wholly unscientific [i.e., the present political organizations]. (Bernard to Kingsbury, May 4, 1932)

¹⁰ Careful study of Odum, a most valuable source book on the personalities of the period makes this clear.

¹¹ The exceptions may be Meroney, whose reputation was established by his flamboyant actions against Chicago, and Parmelee, who established links to the eastern and national societies by his actions.

¹² For example:

We face the pent-up dissatisfactions of ten years. These have been growing without definite form and without leadership. . . . [T]he dissatisfaction in our ranks is so great that even he [Parmelee] was able to bring us last year . . . close to open revolt . . . [W]e found unanimous and vigorous dissatisfaction with the "old order" in the American Sociological Society. . . . [Y]ou were really elected . . . on that issue. (Dittmer to Bernard, February 27, 1932)

¹³ For example:

I have a feeling that we are sitting on a mine, and may, have an explosion that will blow the A.S.S. into four or five regional bodies, and two or three or four "Schools" who will continually be at each other's throats: the statistical group, the McIver-like mystics, the case-study attitude boys, the reformitarian-community "organizers," the social work fellows. (Bain to Bernard, March 23, 1932)

¹⁴ See Bain's statement, above. Also interview with Herbert Blumer.

¹⁵ W. I. Thomas is seen by the rebels as an ally of the Young Turks (Bernard to Davis, February 10, 1934; Bernard to Bossard, March 1935).

¹⁶ Burgess (1934) and Chapin (1935) were presidents of the ASS during the period, and Rice was Chicago's nominee for the presidency for 1936; Wirth and Blumer between them covered the role of secretary-treasurer of the ASS continuously over the period; Faris edited the *AJS*; Rice chaired the influential Committee on Research which acquired the task of looking into the issue of constitutional reforms in 1932; Ogburn and Rice, together with W. I. Thomas, were the Society's Research Planning Society, 1934-1935.

from this base are consistently antagonistic to the Bernard group.¹⁷ The degree of active cooperation between the two groups varies over the period, but in 1935 the "quantifier," Rice, was in line for the presidency of the Society and was viewed by the rebels as Chicago's candidate. In 1936, in the aftermath of the 1935 rebel victory, members of both groups founded the SRA (interviews with Blumer, Cottrell).

A coalition between Young Turks and the Chicago faculty seems improbable only if, first, we see them as two irreconcilable theory groups (quantifiers and a qualitatively oriented Chicago School); and, second, if we assume that theoretical affiliation is the dominant factor in professional cooperation and division. I address the first assumption here, and the second in the next section.

In the thirties the Young Turks were a theory group, a movement passionately proselytizing for radical positivism and for quantification as a means to that end. Chicago, however, was not a School. Its reputation for theoretical cohesion among contemporaries and later writers reflects its situation in the twenties, with Park's centrality and the visibility of his Research Institute of productive, talented graduate students. Even this group in this earlier period, moreover, was in no way theoretically opposed either to positivistic directions for sociology or to quantification.¹⁸ By the thirties the Chicago department had become a melange of theoretical positions, prominent among which was that represented by Ogburn. Ogburn (1929) was the prophetic spokesman of the quantifiers, many of whom had been his students either at Columbia or at Chicago. The theoretical divide between the two

groups thus is not as watertight as it has been depicted.

4. *The Chicago loyalist.* Like the rebel fringe this is a population which we can discern only dimly and inferentially in the correspondence. Figure 1 identifies the main groups in this population. Many of its members were Chicago products, though this in itself was no guarantee of loyalty, as the ranks of the rebels show. Others seem to have been deterred as much by the acrimoniousness of the rebels' style as by the content of their message. In the end the support of this population proved ineffective in preserving Chicago's position.

The Context and Issues

Five factors, in interaction, produced the rebellion.

1. *Personality and biography.* Both the correspondence and my interview material show that various long-standing animosities, a generalized sense of grievance, and the vagaries of short-tempered personalities helped produce the rebellion.¹⁹ This tells us part of the story of the organized opposition, a little about the timing of the episode, and nothing about the wider disaffection. A fuller explanation requires that we consider the social characteristics of the period.

2. *Professional expansion.* During the twenties there had been a significant increase of graduate programs and Ph.D.s in sociology (Chapin, 1934; Bernard, 1945). Such growth implies differentiation of interests, and this in turn makes increasingly difficult the organizational hegemony which Chicago had established in earlier times.

3. *Changes at Chicago.* The fund of internal cohesion and morale which had sustained Chicago's organizational influence in the twenties was considerably depleted by the thirties. Park's aging and retirement, growing awareness of theoretical problems in the 1920s framework (Kuklick, 1973), differentiation of interests in the department (Faris, 1967; Shils, 1970), in-fighting over theoretical dif-

¹⁷ This is particularly evident in Rice's opposition to Bernard's push for constitutional reform on the Committee on Research 1932, and Chapin's opposition to Bernard's move to disestablish the *AJS* in 1935.

¹⁸ The Park and Burgess (1921:44) text saw the mission of the 1920s era in American sociology to be that of achieving empirical precision for the discipline and the whole development of the ecological research effort at Chicago was precisely an effort to achieve precision through quantification.

¹⁹ All interviewees mentioned Bernard's personal feud with Faris.

ferences (interviews with Blumer, de Vinney, Lejins) all helped produce this change. Personalities and the changes at Chicago ([2] and [3]) in combination probably made a challenge to Chicago's influence inevitable. But to understand the rebels' motives and perceptions, the patterns of coalition and division in the conflict, and the formulation of the issues, one must draw on the interaction between factors (4) and (5).

4. *The quantification challenge.* A major conceptual shift occurred in American sociology in the thirties: the move to center stage of a methodology based on large-scale quantification. This methodology rested on theoretical assumptions about a social universe which was massive, structured, patterned, predictable and empirically knowable. It was fired by an ideology of radical positivism which called for full mobilization of the profession in pursuit of objective knowledge about the causal principles of social life, and which advocated, as means to this end, standardization of research procedures, team research, statistical sophistication. This ideology was moreover radically elitist on the issue of what activities constitute "good" sociology (Ogburn, 1929).

This new orientation was promoted by an identifiable theory group, originating in the so-called Columbia group of the twenties (Bernard, 1973; Wiley, 1978). From the twenties Ogburn was the group's leading luminary (Bernard, 1973). His move to Chicago in 1927 broadened the regional base of the quantifiers. His presidential speech in 1929 was a platform speech for their perspective.

During the thirties this group expanded to include Ogburn's converts at Chicago (e.g., Stouffer) and the students of other members of the Columbia group (e.g., Lundberg at Minnesota). The quantifiers, moreover, clearly were moving to positions of centrality in the profession: into executive positions in the Society; into committees controlling research funds; and into the burgeoning structure of policy-related jobs in the New Deal administration.²⁰

²⁰ Ogburn, Chapin, Rice and Dorothy Thomas all

Bernard's rebels resisted the quantifiers not so much on theoretical grounds,²¹ but in terms of their growing power base in the profession and their militant but narrow definition of what constituted good sociology (Bernard, 1932). Most significant of all, given our interests, the rebels assumed that they were observing a process by which this new theoretical-ideological elitism fused with the organizational elitism which had for so long given Chicago centrality in the profession. They assumed, that is, that the Chicago faculty and the quantifiers were a working coalition.²²

Several observations led to this assumption of coalition: Ogburn's position as a ranking member of the Chicago department and as the mentor and inspiration of the positivists; his election to the presidency by tactics which seemed a prime example of Chicago's tendency to political railroading and his presidential

had executive positions in the Society over the period; Rice, Ogburn and Lundberg had positions on the Social Science Research Council; Ogburn and Rice were influential in the New Deal's effort to utilize social science.

²¹ Theoretical opposition to the quantifiers was mounted by McIver (1931; 1942), Sorokin (1936; 1944), Znaniecki (1934). Chicago's public stance against the methodological position of the quantifiers was cautious and ambivalent (Blumer, 1931; 1939).

²² This important point emerges from the following statements:

[1.] Although I received my Ph.D. from Chicago I feel that the dominance the Chicago group has exercised in the Society has been harmful, and the linkage of Ogburn and Rice seems to me to augur the continuance of that domination. (Becker to Bernard, October 5, 1932)

[2.] . . . [I]n my own thought Ogburn has played the role of the villain in the drama of American sociology for several years. . . . [H]e is the leader and prophet of those who are disposed to deny the title of science to everything but statistics . . . and . . . from his position in the Social Science Research Council he is able . . . to have considerable influence on the public affairs of organized social science. (House to Bernard, April 6, 1932)

[3.] I am sure we shall have a difficult job before us to thwart the designs of the Ogburn-Rice machine. Incidentally, I learned . . . that the Chicago group has the whole FERA under their thumb in Washington. . . . They are thus in a very strategic position. It is typical of the close working of that Chicago machine. (Sims to Bernard, April 8, 1935) Also Bernard to Davis, February 10, 1934; Davis to Bernard, 1934 (undated); Bernard to Bossard, March 1935; Parmelee to Bernard, April 1935.

address which symbolically opened the quantifiers' campaign; Stuart Rice's chairmanship of the Society's Special Committee on the Scope of Research, during which he worked both to block efforts toward electoral reform which would have challenged Chicago, and to advance the quantifiers' view of scientific sociology; Chapin's election to the presidency as the quantifiers' candidate and his subsequent coolness to Bernard's suggestions for a new journal; W. I. Thomas's link to the quantifiers through his wife, and his support of them on the Social Science Research Council. One could multiply such illustrations. Together they led the rebels to see a functioning coalition between Chicago and the quantifiers on research committees, government panels, annual elections in the Society, committees for constitutional change, and in defense of the *AJS*. When one adds the fact that the theoretical debate over the quantifiers' position which did occur at Chicago (interviews with Herbert Blumer, Leland de Vinney, Peter Lejins) was confined within the walls of the department and not aired before the society, the rebels' sense of an elitist conspiracy is even more understandable.

The idea of conspiracy was an exaggeration. What there was between the Chicago faculty and the quantifiers was a degree of spontaneous unanimity in political action, as well as a degree of more self-conscious cooperation. An interplay of several factors produced this: the personal links already described; theoretical ambivalence in the classic Chicago position on the positivist issue raised by the quantifiers; norms of loyalty among Chicago products and of civility among its faculty; active dislike of Bernard and some of his associates by members of both groups; the commonality of interests that exists between elites, and their tendency to rally against a challenge to the principle of elitism. In 1936, in the aftermath of the rebellion, these same factors led Chicago and the quantifiers to found the SRA.

5. *The Depression*. In several specific ways the massive international crisis of the Depression deepened the lines of division in the sociological community.

(a) Theoretical strain. The Depression

presented sociologists with a dramatic new set of empirical problems for theoretical interpretation, problems which were massive, societal, international. The Park and Burgess (1921) framework, with its focus on intraurban group dynamics, was unsuited to this theoretical task. The theoretical fragmentation which occurred at Chicago in the thirties, perhaps even its declining ability to command a wide professional audience, derives in part from this situation (Lengermann, 1977). At the same time the fervor of the quantifiers during the thirties (though not the origins of that movement) can be traced to the Depression. The cry for better science and greater technical proficiency, the attack on existing sociology as too "philosophical," expressed the quantifiers' frustrations over the discipline's inability to respond to the crisis, and their strategy for a more effective response (Ben-David, 1970; Martindale, 1976). In the early thirties there were many sociologists at least half persuaded by this appeal.

(b) The survival of the *AJS*. The Depression strengthened the determination of the Chicago faculty to head off the rebellion, for in a time of economic hardship it was feared that the journal might not survive without the guaranteed market provided by the Society's membership. This threat led men of varied theoretical outlooks to close ranks in defense of the journal (interview with Herbert Blumer).

(c) The regional associations. These organizations were products of the thirties, more inexpensively providing a forum for professional activity than the national association. Between 1929 and 1932 the ASS lost 25% of its membership (interview with Herbert Blumer). Many of these financially precarious sociologists probably joined the regionals. As we shall shortly see, many of them resented Chicago's professional centrality. The regionals, as noted earlier, became organizational structures for consolidating the sense of disaffection from Chicago.

(d) Career anxiety. The Depression halted and then reversed the expanding career structure for sociologists in universities, leading to cuts in salaries and in the number of positions (Chapin, 1934; Faris, 1934; Johnson to Bernard, January 18,

1932). Some sociologists were safe, untouched by the crisis. These were persons with high-ranking positions, in well-endowed schools, and with strategic locations in the networks of communication and influence that impinge on university careers. But for recent Ph.D.s, or persons of junior rank, in small schools, with small professional reputations, the Depression posed a constant threat. Some were forced to drop out of the ASS by financial hardship, others probably hung on precariously to their membership. For all of them competition became intense for survival in existing jobs, for new employment opportunities, and for the professional recognition that enhances career chances. Anything that smacked of a calculated narrowing of access to these opportunities roused hostility and resentment. And these threats seemed to be present in Chicago's particularistic, inner-circle pattern of job recommendations, its editorial control over what was published in the *AJS*, its influence on what was selected for presentation at the Society's annual meetings, its influence on who could gain prominence through executive service to the profession, its inner track to research money, and, with the shifting pattern of opportunity that came with the New Deal, its access to an elaborating structure of government jobs (letters to Bernard from Smith, April 4, 1932; from House, April 6, 1932; Duncan, April 29, 1932; Sims, April 8, 1935; Bernard to Reinhardt, December 19, 1933). Indeed, given the rebels' perception of a coalition between Chicago and the quantifiers, the situation of the thirties seemed to pose a rapidly growing threat to career chances. For the older situation of organizational control by Chicago went along with a broad and eclectic definition of what constituted "good" sociology. The emerging new situation, however, seemed to augur the linkage of this old pattern of control to a narrow and rigid definition of professional achievement (Smith to Bernard, April 4, 1932; House to Bernard, April 6, 1932). This situation of competition and anxiety produced the rank and file supporters of the rebellion.

In summary the rebellion that disestablished the *AJS* occurred in a situation of

organizational diversification in the profession and of declining cohesion at Chicago. The rebellion was led by men who often had personal grievances against Chicago and supported by a population who, because of the Depression, resented Chicago's influence on career chances in sociology. Both leaders and supporters believed that there were rapidly growing elitist trends in the profession. Leaders and followers were bound together, not by a theoretical viewpoint, but by an organizational ideology of antielitism.

The Consequences

The 1935 episode marked the peak in the mobilization of Bernard's rebels. While continuing to be vigilant for their interests, there was a reduction of interest, a shift to new issues.²³ The economic crisis was fading away. The leaders, aware that they made significant gains in their effort to reduce Chicago's organizational centrality, may have been content to reduce their level of commitment.

The organizational changes produced by the rebellion did not result in the full egalitarian system which its leaders had talked of at the height of the contest, and which their opposition had dreaded. It did however extend opportunities for effective participation and influence in the national society to groups not sponsored by Chicago, in particular to eastern-based sociologists. The Eastern Conference was the single most powerful regional association, after the Midwestern; its support had been strategic to Bernard's effort. It was the center for the public debate on the theoretical implications of the quantification movement and it had a density of structure and effort which contrasts with some of the other areas which had supported the rebellion. This density proved an effective resource in the drive to seize the opportunities created by the 1935 rebellion.

This is particularly true with regard to the new journal. As Chicago continued to monopolize its *AJS*, the new *ASR* func-

²³ Bernard's attention shifts to the American Association of University Professors in the years immediately following 1935.

tioned increasingly as a forum for eastern-based sociology. Since the rebels were not a theory group, their imprint on the *ASR* is not a discernible one. Instead one sees the patterns of the paradigmatic contest being waged in the East—between quantifiers, their critics, and, increasingly, the emerging perspective of structural-functionalism.²⁴ In this sense both the quantifiers and structural-functionalists were heirs of the rebellion. Neither quantifiers nor structural-functionalists, however, had made the rebellion.

Conclusions

The thirties were a period of rapid, significant change in American sociology during which many of the structures of the contemporary profession were institutionalized. These include the particular pattern of influential journals which channel professional communication, some important organizational features of the professional society, sociology's particular service relationship to national public policy, the centrality of a method based on large-scale quantification, a theoretical focus on macrosystems, and the centering of professional influence in the Northeast. What caused these changes? My introduction described three competing perspectives in contemporary sociology on the issue of scientific change. This section looks at the degree of "fit" among these approaches and the episode of scientific change described in this paper.

1. *Perspectives emphasizing intrinsic factors for scientific change.* (a) The developmentalists. This group sees structural differentiation as a major change process in scientific systems. Differentiation refers to a relatively steady increase in organizational complexity, resulting in part from increases in group size. This paper has not focused on such processes, but has touched on some factors which indicate their occurrence: multiplication of graduate departments of sociology,

"overproduction" of Ph.D.s, differentiation between the aspirations of the graduate departments and those of smaller schools, the emergence of regional groups, a greater diversity of sources of research support, a greater number of formal theoretical alternatives, multiplication of journals, and greater organization complexity in the ASS. Some of these changes (those named first) are antecedent conditions for others (those listed later). In a way which is classic to the developmentalist model, differentiation begets differentiation and is both cause and content of the process of change. There is a fit therefore between this approach and the particular change episode I have described. Alone, however, differentiation is an inadequate explanation of the episode, telling us little about the acceleration of change in the thirties, the motivations of the participants, or the specific outcomes of the episode.

(b) The Kuhnians. This perspective focuses on processes of theoretical stress, theoretical change, and professional conflict in explaining scientific change. These processes describe the main features in the case study described in this paper. The decline of the Park and Burgess perspective, the challenge of militant quantifiers, the later emergence of structural functionalism, these theoretical changes frame the episode, which is in itself one of fierce professional conflict. But Kuhnians fuse theoretical change and professional conflict into a single change process in which theoretical issues have causal priority. In this case study we see that theoretical challenge and professional infighting were partly independent of each other. The cautionary note that must be raised on the basis of this study is as follows: scientific communities do divide and fight over paradigms. They also divide and fight over issues of professional power, status and material privilege. These two sources of confrontation may fuse into a single dynamic for conflict, but they are not necessarily fused.

2. *Perspectives emphasizing extrinsic factors for scientific change: the critical conflict perspective.* This perspective looks to changes in the broader societal context of the profession for the main

²⁴ Hence Kuklick's interpretation of the sources of rebellion. She uses the *AJS* and the *ASR* as her primary data.

causes of scientific change. My paper has focused on one element of change in American society which influenced the sociological community: the Depression and New Deal.²⁵ The societal crisis of the thirties raised new empirical and theoretical questions for sociologists, brought new demands from public and state to bear on the professional community, opened up new sources of employment and research support, created career anxiety for many sociologists and helped produce the regional associations which became bases for opposition to Chicago. At a concrete level it fuelled the processes of theoretical change and of intra-professional conflict. At an abstract level it demonstrated the openness of the boundaries between society and a discipline which claims that its special focus is society. The Depression however is not *the* cause of the changes in sociology in the thirties. Theoretical transformation, underway before 1929, was prompted both by the growth and differentiation of the profession, and by the growing recognition of theoretical and methodological problems in the Park and Burgess Chicago framework. Similarly many of the factors which would lead to a fight over Chicago's centrality were present before the Depression years: personal feuds, Chicago's loss of momentum, professional differentiation, and emerging elitist coalitions. The Depression accelerated the rush into open conflict in the ways indicated above. It was both one cause and a major precipitating factor for the changes of the thirties in American sociology.

What does this case study of scientific change tell us about the three models of scientific change in contemporary sociology? It shows that each is a partial model, each exaggerating, by exclusive focus, the independent causal status of one cluster of explanatory factors. A full explanation of scientific change requires that one look at the relationships among these factors. An abstract statement about the nature of these relationships must await an accumulation of case studies of the type reported here.

²⁵ Though the critical conflict theorists would emphasize economic and political changes like the De-

APPENDIX

THE REBELLION AGAINST CHICAGO

I. *Prologue*

Dec. 1928	Ogburn's election as president of the ASS
Dec. 1929	Ogburn's presidential address—platform speech for radical positivism
1930	(Gap in correspondence)

II. *The First Rebel Thrust (January 1931–December 1932)*

Jan. 1931	Correspondence on abuses in ASS electoral procedures ^a
Spring 1931	Anti-Chicago discussions, led by Maurice Parmelee, at Eastern Sociological Conference ^b
Nov. 1931	"Three Communications from Dr. M. Parmelee," <i>AJS</i> 37:3, p. 468. In name of ad hoc committee of eastern sociologists' proposals for: (i) electoral reform in ASS (ii) review of current scientific standards in sociology
Dec. 1931	Rebel political action: (i) L. L. Bernard elected president of ASS ^c (ii) establishment of a committee to consider a plan for control of the official journal ^d (iii) expansion of the functions of the Special Committee on the Scope of Research by the ASS (the "Rice Committee," funded by SSRC to report to ASRC) to consider Parmelee issues of scientific standards and electoral reorganization ^e
Jan.–Nov. 1932	Constant struggle between Bernard and "establishment" on: (i) committee chairmen, esp. Finance Committee; Bernard makes inroads ^f

pression, my own view is that these are only some of the significant societal changes that influenced American sociology in the thirties. Almost as important, for example, is the reorientation of philosophy towards logical positivism and the transposition of these ideas to America in the thirties with the intellectual migration from Nazism (Toulmin, 1977; Fleming and Bailyn, 1969).

^a Letters by Bernard, dated Jan. 8 and Jan. 12, 1931.

^b Dittmer to Bernard, Feb. 27, 1932.

^c Elmer to Bernard, Jan. 19, 1932; Meroney to Bernard, Jan. 21, 1932; Mehus to Bernard, Jan. 23, 1932.

^d Rice to Crampton, May 12, 1932.

^e Krueger to Bernard, Feb. 16, 1932; Sims to Bernard, Apr. 12, 1932.

^f E. G. Parmelee correspondence between Wirth and Bernard, Jan. 18, 1932; Feb. 18, 1932.

- (ii) electoral reforms;⁸ discussion without action
- (iii) publications;⁹ ASA annual proceedings, *AJS* contracts with University of Chicago Press; discussion without action
- (iv) Rice Committee;¹ Bernard's effort to expand membership, given expansion in functions, successful
- Dec. 1932 Annual meetings, fierce conflict:
- (i) Reuter, a Chicago sympathizer,¹ wins presidency
- (ii) rebels establish a special Constitution Revision Committee chaired by a rebel (Jerome Davis of Yale), and with narrow majority of rebel sympathizers²
- (iii) rebels reconstitute Committee on Publications; membership either rebels (Newell Sims of Ohio, chair; Bernard; Meroney) or rebel sympathizers (Read Bain of Miami University; Howard P. Becker)³
- III. *Counterrebellion: The Rebels Thwarted*
- Dec. 1933 Burgess president of ASS, Blumer secretary;⁴ Davis Committee, nonradical report, approved. Nominations to be 24 hours before elections (not by plebisite balloting)⁵
- Sims Committee, suggestion for new journal tabled; membership to choose between *AJS*, *Social Forces* and *Sociology and Social Research*⁶
- Jan.-Dec. Burgess, a master tactician, outmaneuvers rebels on all issues⁷
- Rebels, disorganized, lose fight for 1935 presidency⁸
- IV. *Rebellion Completed*
- Jan.-Nov. 1935 Rebels regroup, Chapin less successful tactician than Burgess
- Issue of journal reopened⁹
- Much correspondence between rebels and potential supporters¹⁰
- Circulation of inflammatory Meroney letter¹¹
- Dec. 1935 Rebellion succeeds
- ⁸ "Report of the Committee to Consider a Plan for the Control of the Official Journal" (in the Bernard Papers).
- ⁹ Extensive correspondence, e.g., Bernard to Sims, Jan. 31, 1934; Bernard to Blumer, Jan. 30, 1934; Blumer to Bernard, Feb. 3, 1934; Bernard to Davis, Feb. 10, 1934; Blumer to the Executive Committee, Mar. 6, 1934; Meroney to Bernard, May 19, 1934; Burgess to the Executive Council, July 11, 1934; Burgess to Bernard, Aug. 4, 1934; Burgess to Bernard, Aug. 10, 1934.
- ¹⁰ Bernard to Davis, Jan. 8, 1935.
- ¹¹ Bernard to Chapin, Jan. 8, 1935. Also under *s* below.
- ¹² An extensive correspondence, e.g., Hertzler to Bernard, Jan. 30, 1935; Bernard to Hertzler, Feb. 7, 1935; Ellwood to Bernard, Feb. 12, 1935; Davis to Bernard, Feb. 15, 1935; Bossard to Bernard, May 13, 1935; John Lord to Bernard, Apr. 2, 1935; Sims to Bernard, Mar. 16, 1935; Rhyne to Bernard, Apr. 2, 1935, etc.
- ¹³ Meroney to Faris, Feb. 16, 1935.
- ¹⁴ E. G. Parmelee to Bernard, Feb. 1, 1932; Pritchett to Bernard, Mar. 29, 1932; Wm. Smith to Bernard, Apr. 1932; Sims to Bernard, Apr. 12, 1932; Wirth to Cutler, May 20, 1932; Bernard to Wirth, Oct. 27, 1932; Bernard to Meroney, Oct. 29, 1932.
- ¹⁵ Hankins to Bernard, Mar. 11, 1932; Wm. Smith to Bernard, Apr. 1932; Rice to Crane, May 12, 1932; Bernard to Odum, Oct. 3, 1932.
- ¹⁶ There is an extensive correspondence on this issue, e.g., Bernard to Lundberg, Feb. 5, 1932; Elmer to Bernard, Mar. 3, 1932; House to Bernard, Apr. 6, 1932; Chapin to Bernard, Apr. 20, 1932; Rice to Bernard, Mar. 10, Mar. 17, Apr. 11, Apr. 18, May 11, etc.
- ¹⁷ Meroney to Bernard, Jan. 14, 1933; exchange between Herbert Miller and Stuart Rice, Jan. 4, 6, 1933.
- ¹⁸ Bernard to Blumer, Jan. 10, 1933; Davis to Bernard, Apr. 21, June 25, July 28, Sept. 6, Sept. 19, Sept. 29, Oct. 3, Oct. 11, Oct. 13, Nov. 1, 8, 16, 1933, etc.
- ¹⁹ Blumer to Bernard, Jan. 10, 1933; Blumer to Bernard, Apr. 14, 1933; Reuter to Bernard, Apr. 29, 1933; Becker to Bernard, Dec. 13, 1933.
- ²⁰ From "Sociology . . . a report on the profession" by Bernard (in the Bernard Papers, Box 1).
- ²¹ "Proposed Constitution of the American Sociological Society" (in the Bernard Papers). Also see references under *p* below.
- REFERENCES
- Barnes, Harry Elmer
1968 "Bernard, L. L." Pp. 64-5 in David Sills (ed.), *International Encyclopedia of the Social Sciences*, Vol. 2. New York: MacMillan.
- Ben-David, Joseph
1970 "Introduction." *International Social Science Journal* 22:7-27.
- Bernard, Jessie
1973 "My four revolutions: an autobiographical account of the A.S.S." *American Journal of Sociology* 78:773-92.
- Bernard, L. L.
1932 "Presidential address: sociological research and the exceptional man." *American Sociological Society: Publications* 27:3-19.
1945 "The teaching of sociology in the United States in the last fifty years." *American Journal of Sociology* 50:534-48.

- Blumer, Herbert
1931 "Science without concepts." *American Journal of Sociology* 36:515-33.
1939 *Critiques of Research in the Social Sciences, I: An Appraisal of Thomas and Znaniecki's Polish Peasant in Europe and America.* Bulletin 44. New York: Social Science Research Council.
- Chapin, F. Stuart
1934 "The present state of the profession." *American Journal of Sociology* 39:506-8.
- Coser, Lewis
1977 *Masters of Sociological Thought.* 2nd ed. New York: Basic.
- De Solla Price, Derek J.
1963 *Little Science, Big Science.* New York: Columbia.
- Faris, Ellsworth
1934 "Too many Ph.D.'s?" *American Journal of Sociology* 39:509-12.
- Faris, R. E. L.
1967 *Chicago Sociology 1920-1932.* Chicago: University of Chicago Press.
- Fleming, Donald and Bernard Bailyn (eds.)
1969 *The Intellectual Migration: Europe and America 1930-1960.* Cambridge, Ma.: Harvard University Press.
- Friedrichs, Robert W.
1970 *A Sociology of Sociology.* New York: Free Press.
- Gouldner, Alvin
1970 *The Coming Crisis in Western Sociology.* New York: Basic.
- Hagstrom, Warren
1965 *The Scientific Community.* New York: Basic.
- Hinkle, Roscoe and Gisela Hinkle
1954 *The Development of American Sociology.* New York: Random House.
- Kuhn, Thomas
1970 *The Structure of Scientific Revolutions.* 2nd ed. Chicago: University of Chicago Press.
- Kuklick, Henrika
1973 "A 'scientific revolution': sociological theory in the United States 1930-1945." *Sociological Inquiry* 43:3-22.
- Lengermann, Patricia Madoo
1977 "Scientific revolutions in sociology? the case of the Chicago school, 1920-1950." Unpublished paper, presented to Cheiron, International Society for the History of the Social and Behavioral Sciences, Boulder.
1978 "Investigating the history of sociology: the present as critical moment." Unpublished paper presented at the meeting of the American Sociological Association, San Francisco.
- Lukacs, George
1971 *History and Class Consciousness.* Cambridge, Ma.: M.I.T.
- McAulay, Robert
1978 "Velikovsky and the infra-structure of sciences: the metaphysics of a close encounter." *Theory and Society* 6:313-42.
- McIver, Robert
1931 "Is sociology a natural science?" *Publication of the American Sociological Society* 25:25-35.
1942 *Social Causation.* New York: Harper.
- Martindale, Don
1960 *The Nature and Types of Sociological Theory.* Boston: Houghton-Mifflin.
1976 *The Romance of a Profession: A Case History in the Sociology of Sociology.* Minneapolis-St. Paul: Windflower Press.
- Merton, Robert K.
1968 "Science and the social order." Pp. 591-603 in *Social Theory and Social Structure.* New York: Free Press.
- Odum, Howard
1951 *American Sociology: The Story of Sociology in the United States through 1950.* New York: Longman, Green.
- Ogburn, William F.
1929 "Presidential address: the folkways of a scientific sociology." *American Sociological Society: Publications* 24:1-11.
- Park, Robert E. and Ernest Burgess
1921 *Introduction to the Science of Sociology.* Chicago: University Press.
- Parsons, Talcott
1954 "The professions and social structure." Pp. 185-99 in *Essays in Sociological Theory.* Glencoe: Free Press.
- Pease, John and Barbara Hetrick
1977 "Association for whom? the regionals and the American Sociological Association." *The American Sociologist* 12:43-7.
- Shils, Edward
1970 "Tradition, ecology, and institution in the history of sociology." *Daedalus* 99:760-825.
- Sorokin, Pitirim
1936 "Is accurate social planning possible?" *American Journal of Sociology* 1:12-25.
1944 *Socio-Cultural Causality, Space, Time: A Study of Referential Principles of Sociology and Social Science.* New York: Russell.
- Toulmin, Stephen
1977 "From form to function: philosophy and history of science in the 1950's and now." *Daedalus* 106:143-62.
- Wiley, Norbert
1979 "The rise and fall of dominating theories in American sociology." In William E. Snizek, Michael K. Miller and Ellsworth Furhman (eds.), *Contemporary Issues in Theory and Research: A Meta-Sociological Perspective.* Westport: Greenwood. In press.
- Znaniecki, Florian
1934 *The Method of Sociology.* New York: Octagon Books.

STRUCTURAL DETERMINANTS OF URBANIZATION IN ASIA AND LATIN AMERICA, 1950-1970*

GLENN FIREBAUGH
Vanderbilt University

American Sociological Review 1979, Vol. 44 (April):199-215

Why is the world becoming increasingly urban? The primary reason is economic development, but economic development alone is inadequate for explaining urbanization in the Third World. Theoretical arguments and fragmentary empirical evidence suggest that, in the underdeveloped regions of Asia and Latin America, urbanization is caused by adverse rural conditions as well as by economic development. Data for 27 Asian and Latin American nations in 1960 and 1970 provide evidence that two rural conditions, high agricultural density and plantation agriculture, spur urbanization in underdeveloped regions, independent of the effects of economic development and prior urbanization in these regions.

The world is becoming increasingly urban. In 1850, 2% of the world's population lived in cities of over 100,000; in 1900, 6%; in 1950, 16%; in 1970, 24% lived in cities of that size (Davis, 1972: chap. 3). The present historical epoch, then, is marked by population *redistribution* as well as by population *increase*. The consequences of this redistribution—this "urban transition" from a predominantly rural, agricultural world to a predominantly urban, nonagricultural world—are likely to be of the same order of magnitude as those of the more widely-heralded increase in world population.

This paper examines the determinants of urbanization in underdeveloped nations in Asia and Latin America. In the industrial West, the urban transition was an adjunct to the industrial revolution; as a consequence, as McGee (1971:201) noted, students of western urbanization often have viewed urbanization as virtually in-

separable from economic development. These students often wheeled in the finely-tuned machinery of traditional economic theory to account for the widely-documented relationship between urbanization and industrialization. Stated briefly, this view holds that industries, seeking to overcome the friction of space in the interchange of goods, locate in contiguous areas. This creates demand for labor in concentrated spatial areas. To attract this needed labor, higher wages are offered in urban areas. Since labor moves (it is hypothesized) from areas where it earns a lower return to areas where it earns a higher return, this urban/rural wage differential results in urban growth. Eventually, however, the labor movement results in an equalization of the marginal productivity of urban and rural labor; the wage difference then vanishes and migration ceases. In short, migration "plays the role of equilibrator . . . in an ideal homeostatic process" (Berliner, 1977:456); migration is a contributor to development, a corrector of regional imbalances, and a conqueror of the "tyranny of space" (for an excellent literature review which takes this position, see Spengler and Myers, 1977).

The cheerfulness of this *labor adjustment* view of urbanization has been muted, particularly among students of urbanization in the Third World, by a growing recognition of the adverse reasons for and effects of urbanization (for a literature

* Address all communications to: Glenn Firebaugh; Box 3, Station B; Vanderbilt University; Nashville, TN 37235.

This paper uses data I collected for my dissertation. I am indebted to the members of the committee—Phillips Cutright (chairman), Elton Jackson, Daniel Maki (mathematics department), and David Snyder—for their advice and encouragement in that enterprise, and to Indiana and Vanderbilt Universities for computer access. I would also like to thank Carolyn Style for her assistance in transforming the data to a form readable by the Vanderbilt computer, and the anonymous *ASR* reviewers for helpful comments on an earlier version.

review see Shaw, 1976: chap. 1).¹ Current tendencies to see urbanization in a less favorable light are spurred by evidence which is difficult to reconcile with the previous view: economists puzzle over the continuation of rural-urban migration in the face of very high rates of unemployment and underemployment in Third World cities (Todaro, 1977: chap. 9); geographers speak of the role of "population pressure on resources" in stimulating rural-urban migration, independent of industrialization in the Third World (see the selections in Zelinsky et al., 1970), and others discuss the role of various rural institutions in prompting rural-urban migration (Thiesenhusen, 1971; Shaw, 1976); social scientists of various disciplines note the extreme magnitude of urban squalor in many parts of the Third World (for example, Hauser, 1957; Breese, 1966; Jackson, 1974; Davis, 1975).

How are we to account for the divergence between the urbanization experience of many underdeveloped nations and the beneficent product promised by labor adjustment theory? For labor adjustment theory, the most disconcerting feature of Third World urbanization is the persistence of rural-urban migration in the face of urban unemployment. Todaro (1969; Harris and Todaro, 1970) suggested that this apparent incongruity could be explained by introducing a stochastic element in the wage difference: Todaro postulated that migration is determined by *expected*, rather than actual, wage differences, where these expected differences take urban employment probability into account. While this modification is useful (the Todaro model currently is the predominant urbanization model in macroeconomics), it stops short of specifying the objective structural reasons for the rural/urban wage differentials.

In this paper I argue that the structural causes of urbanization in the Third World

are embedded in rural strictures as well as in urban attractions. This contention is not new; much of the urbanization literature emphasizes the effect of shrinking rural opportunity on urbanization.² Hard evidence for this popular view is scarce, however. Indeed, most empirical cross-national studies have concluded that adverse rural conditions have no effect on urbanization.

This paper uses data for 27 Asian and Latin American nations at two points in time (1960 and 1970) to assess the independent effects of rural conditions on urbanization. We first examine the theoretical basis for the contention that adverse rural conditions, as well as economic development, prompt urbanization in the Third World. As noted above, most empirical cross-national studies of this contention have concluded that adverse rural conditions have no effect; however, a review of the methodology of these studies casts doubt on their findings. The data used here do not permit a thorough examination of all the relevant hypotheses about the effect of rural conditions on urbanization; nevertheless, the results support the thesis that two key rural characteristics, agricultural density and type of land tenure, have significant effects on urbanization. The final section of this paper discusses the implications of this finding for urbanization theory.

RURAL CONDITIONS AND URBANIZATION IN UNDERDEVELOPED NATIONS

If one makes the reasonable assumption that adverse proximate conditions are more likely to prompt migration than promising distant conditions,³ then the

² Adverse rural conditions could affect urbanization in developed countries as well as in underdeveloped countries. Accumulating evidence suggests that conditions such as enclosures and the commercialization of agriculture were indeed factors in early western urbanization (Hobsbawm and Rudé, 1968). I will note the differences between urbanization in developed and underdeveloped countries in a later section.

³ Proximate conditions are better known than distant conditions to the potential migrant. Further, experienced adversity may be more effective than the promise of prosperity in overcoming the "property of inertia" (Berliner, 1977:447) in human behavior, though of course we can only speculate on this point.

¹ In general sociologists have been less enthusiastic about urbanization than economists, since sociologists typically have focused on social structural and social psychological effects of urbanization (Wirth, 1938, for example; also Fischer, 1972), while economists typically have focused on the role of urbanization in moving labor from the primary to the (more productive) secondary sector.

price of millet may well be more important in rural-urban migration than the going urban wage. In this section we will explore in some detail the possible links between adverse rural conditions and urbanization in underdeveloped nations.

Level of urbanization (that is, percent urban) can change because of (1) net urban in- or out-migration, (2) reclassification of area (that is, due to population increase and/or annexation, an area previously classified as nonurban can be reclassified as urban), or (3) differences in urban and rural rates of natural increase.⁴ The discussion in this section will focus on the theoretical rationale for expecting rural conditions to affect urbanization through their effect on rural-urban migration and urban/rural fertility differentials.⁵ While rural-urban migration and urban/rural differentials are distinct conceptually, they are confounded empirically; rural-urban migration likely affects the urban/rural fertility differential (see below). We now look in more detail at these links between rural conditions and urbanization;

we examine first the migration link, then the fertility differential link.

Rural-Urban Migration: Direct Effect

The overwhelming reason for the increase in percent urban in the Third World is (net) rural-urban migration. Population movement from rural to urban areas obviously increases percent urban, since it increases its numerator without changing its denominator. This is the direct effect of rural-urban migration on urbanization (as distinct from its indirect effect, that is, its effect on the urban/rural fertility differential). Here I sketch the logic behind the premise that rural conditions in the Third World independently contribute to urbanward population movement.

In underdeveloped nations adverse rural conditions often stem from rapid population increase. Rural populations can respond to rapid population growth in three ways: emigration (movement to urban areas), frontier development (cultivation of additional land), and/or agricultural involution (further subdivision of presently-cultivated land). According to many observers, emigration is a common response (for example, Hauser, 1957; Jackson, 1974; Munro, 1974). The ability to make a living in most rural areas in the Third World is tied to the availability of arable land. Where agricultural density is high and families are large, farmers cannot always afford to subdivide the land for their children. Additional land must be brought under the plow; but such land is not always available. Under such circumstances some of the population will be displaced and will migrate to cities.⁶ Indeed, according to Long (1975:3), "The inability of subsistence agriculture to absorb such a large increase in the rural population has resulted in a refugee-like movement of large numbers of persons to the only available haven, the cities."

⁴ Focussing on urban/rural differentials *by themselves*, we would expect percent urban to decrease in underdeveloped nations, since in these nations rural rate of natural increase typically exceeds urban rate (Martine, 1975)—that is, the urban/rural ratio is typically less than one. Since percent urban is increasing in these nations, we can infer what has been documented more directly: the presence of extensive rural-urban migration.

Along these lines, several readers of an earlier draft misinterpreted the meaning of a positive effect. To say that adversity of rural conditions affects the urban/rural differential in natural increase in a positive direction is *not* to say that percent urban would necessarily *increase* in the absence of urban in-migration or reclassification—that is, it is not to say that the urban/rural ratio will necessarily exceed one in regions characterized by adverse rural conditions. Rather a positive effect means that, in two regions alike in other respects, we expect the region with the more adverse rural conditions to have the larger urban/rural ratio, albeit this ratio will likely still be less than one.

⁵ I do not expect rural conditions to be related to urbanization through reclassification; indeed, reclassification is a type of measurement error resulting from the fact that one must set a criterion for classifying an area as urban. I do not expect this measurement error to bias the results, however. Reclassification accounts for a relatively small fraction of city growth (about 7% worldwide for 1960–1970: Davis, 1972:314). In addition, there is little reason to believe that reclassification is related to the independent variables.

⁶ This is not to say that emigration is the *exclusive* response to population increase in underdeveloped nations (see Boserup, 1965, and Kumar, 1973, for evidence of frontier development; see Geertz, 1963, for evidence of agricultural involution in Java). While a given individual does not respond in all three ways simultaneously, a population can: some farmers may emigrate, some may work new land, some may subdivide the land they have.

Besides rapid population increase, Third World agriculture is characterized by structures which generate and perpetuate inequality (Beckford, 1972; Kocher, 1973). The Spanish colonization of Latin America is a classic example: large land grants to early colonizers led to a system dominated by the *latifundista*. The effect of this system is still evident in much of Latin America. In Colombia in 1960, for example, .6% of the farms contained 40% of the total agricultural land, while 63% of the farms contained less than 5% of the land (Shaw, 1976:Table 5.1). It is generally conceded that such institutional arrangements promote the use of capital-intensive techniques (Dorne, 1972: chap. 4) and permit the use of large proportions of a nation's land (often its best land) for food and nonfood export crops even in the face of insufficient national foodstocks (Lappe and Collins, 1977). In addition, some argue that these arrangements exacerbate inequality as large landholders stand to benefit much more than small landholders from imported technology (Barraclough and Schatan, 1973). The effect of land tenure structures on capital-intensive vs. labor-intensive techniques is particularly relevant to migration; *ceteris paribus*, we would expect greater inequality to lead to greater emigration through its promotion of capital-intensive techniques. I will be unable to speak directly to all these points in the data analysis, since cross-national land tenure data are crude, but I did want to note the grounds for believing that agrarian structures affect rural-urban migration.

Developed countries. Does the above *rural push* argument also apply to the historical experience of presently "developed" countries? Developed countries of course also experienced rapid population increase as they passed through the demographic transition. In addition, there is evidence that rural structures drove people from the land in these countries as well (Hobsbawm and Rudé, 1968). However, a consideration of both sides of the squeeze—population increase vs. urban and rural economic expansion—suggests that the squeeze is more severe in the case of the underdeveloped countries.

Rates of population increase in underdeveloped countries exceed those experienced by developed countries. In the Third World, birth rates exceed death rates, often substantially, in urban areas as well as in rural areas. Hence underdeveloped countries, in contrast to the experience of developed countries (Bairoch, 1975:155), must contend with substantial migration to cities which are already growing rapidly due to natural increase *per se*:

When the migrants come, as they inevitably do in substantial numbers, they therefore come on harsh terms. . . . Their number is large enough, added to excess births, to push city growth beyond any rate hitherto known. . . . (Davis, 1973:222)

Further, circumstances in the developed countries differed in that, during their period of rapid population growth, the New World was available as a population outlet (Trewartha, 1969:chap. 2). Finally, population density of the developed countries was lower at the outset; taken together the underdeveloped countries exhibit a density five times that of the developed countries at a comparable level of urbanization (Davis, 1973).

While rate of population increase in the underdeveloped countries has exceeded that experienced by the developed countries, economic expansion has not (Todaro, 1977:chap. 8). In spite of the positive growth rates found in most underdeveloped countries (Todaro, 1977:Appendix 2.2), few if any of these countries have been able to duplicate the experience of the West in which, after some lag (Jones, 1971), industrialization produced rapid expansion of urban employment opportunities. This difference between underdeveloped and developed countries stems largely from their differential positions in the world economy, as dependency theory emphasizes (for example, Wallerstein, 1974). In particular, dependency theory argues that the economic dependence of the underdeveloped peripheral countries on the core capitalist powers distorts the economic, political, and social structures of the peripheral countries (Beckford, 1972; Chase-Dunn, 1975). Put very briefly, economic dependence results in the interrelated problems of (1) highly-concentrated economic growth and (2)

importation by the periphery of (inappropriate) capital-intensive technology from the core (see the selections in Wilber, 1973); such highly-concentrated, capital-intensive economic growth has not been conducive to the expansion of urban or rural employment in underdeveloped countries (Todaro, 1977:chap. 8).⁷

In sum, support can be found for the view that adverse rural conditions contributed to urbanization in the developed as well as the underdeveloped countries. But the effect is likely much greater in underdeveloped countries, where the population and economic constraints are more severe: population growth is faster and aggregate economic growth is not being effectively translated into employment for the masses.⁸

Urban/Rural Fertility Differentials

Adverse rural conditions can affect urbanization by prompting rural-urban migration. The effects of migration can be indirect as well as direct: migration can affect the urban/rural differential in natural increase—specifically, the fertility differential⁹—which, as we noted above, affects urbanization. Friedlander (1969) discussed the relationship between migration and fertility in developed nations; in this section I will discuss this relationship in underdeveloped nations. Finally, I will consider the possibility that adverse rural

conditions affect urban/rural differentials independent of the direct and indirect effects of migration.

How could migration affect the urban/rural fertility ratio? Consider first the baseline case where migrants are randomly selected from their areas of origin. Assume further that, in the Third World, rural natives have higher fertility than urban natives (a proposition which is generally accepted). In such a case, migration (in either direction: rural natives to cities or city natives to rural areas) would narrow the gap between urban and rural birth rates; that is, migration would increase the urban/rural fertility ratio.

However, the assumption that migrants are randomly selected is erroneous (Lee, 1966); if the spate of microdemographic migration studies have a central message, it is that migration is selective with respect to certain individual characteristics. The most important of these characteristics is age; migrants are more likely to be of childbearing age (Weller et al., 1971). Like the argument in the baseline case, the selection-by-age argument implies a narrowing of the urban/rural fertility gap in underdeveloped nations. On the other hand, selection on the basis of other characteristics could work to inflate the fertility gap. In particular, rural migrants may be selected on the basis of traits related to social mobility, which traits tend to be inversely related to fertility. However, selection on the basis of mobility traits is probably more important in early, development-induced migration, and is less important in migration prompted by adverse rural conditions (Zarate and Zarate, 1975:150).

In short, the relationship between migration and the urban/rural fertility ratio is somewhat ambiguous: some characteristics would tend to raise the ratio, others would tend to lower the ratio. However, the weight of the evidence favors the view that the former dominate; that is, the *net* effect of migration most likely is to raise the urban/rural fertility ratio. Most likely, then, the indirect effect of migration on urbanization, like the direct effect of migration on urbanization, is positive. Further, the indirect effect of migration no doubt is small relative to the

⁷ The point is *not* that core nations eschewed all capital-intensive technology in their early industrialization but rather that for them such technology was indigenous.

⁸ What about the effect of rural conditions on urbanization in developed countries *now*? In a separate cross-national analysis (Firebaugh, 1976:chap. 5) I found that agricultural density has no effect on urbanization in western developed countries, 1950–1970. However, proxy measures of constraints on demand for agricultural products did have positive, independent effects on urbanization. This finding was consistent with the expectation that present constraints in the agricultural economies of developed countries involve aggregate demand and not land.

⁹ Firm evidence concerning mortality differentials is lacking (United Nations, 1973:135). Consistent with most of the previous literature (for example, Macisco and Myers, 1975), then, I will focus this discussion on fertility differentials.

direct effect of migration; indeed, in the Third World, migration *per se* no doubt is a far more potent factor in redistributing population than is differential natural increase.

One question remains in our consideration of the links between rural conditions and urbanization: Do adverse rural conditions (directly) inhibit rural fertility (thereby increasing the urban/rural fertility ratio)? The possible effect of density on urban fertility has attracted a great deal of attention (see Galle and Gove, 1978, for a literature review), while the effect of agricultural density on rural fertility virtually has been ignored. This is ironic, since a high level of density is a more acute economic problem in rural areas than in urban areas; farming is more land-extensive than industry. High agricultural density would tend to reduce the value of children's production, *ceteris paribus*; according to the microeconomic view of fertility, this would reduce fertility (see, for example, Williams, 1976). Evidence from the Punjab suggests that high agricultural density may indeed inhibit rural fertility (Ali, 1979). However, I must stress that this evidence is preliminary; definitive conclusions cannot be made at this point.

What can we conclude about rural conditions and urbanization on the basis of the theoretical considerations and fragmentary empirical evidence reviewed above? Figure 1 depicts the intervening variables, and the expected signs, in the relationship between rural conditions and urbanization. The effect of adversity on

urbanization through migration is positive; the direct effect of migration on urbanization is positive, and likely substantial; the indirect effect of migration on urbanization probably is also positive, but smaller. The direct effect of adversity on the urban/rural differential is unknown; however, even if, contrary to the Punjab evidence, it is negative, this effect surely would not offset the positive effects of adversity which operate through migration. I would like to be able to estimate all the coefficients in the path diagram in Figure 1 but, given the scarcity of migration and rural- and urban-specific fertility data for most of the Third World, such partitioning of effects must be left to future studies. We must be content with a more limited objective: to assess the *net* impact of rural conditions on urbanization in the Third World. For this more limited objective the implications of Figure 1 are clear: we expect the net effects of adverse rural conditions on urbanization to be positive.

METHODOLOGY

Unit of Analysis

Properties such as urbanization and agricultural density describe regions, not individuals. What type of region (province? nation? continent?) is most appropriate for studying determinants of urbanization? On the one hand, the larger the region, the fewer the cases (that is, the less efficient the analysis). On the other hand, regions should be large enough to encompass most rural-urban migration;

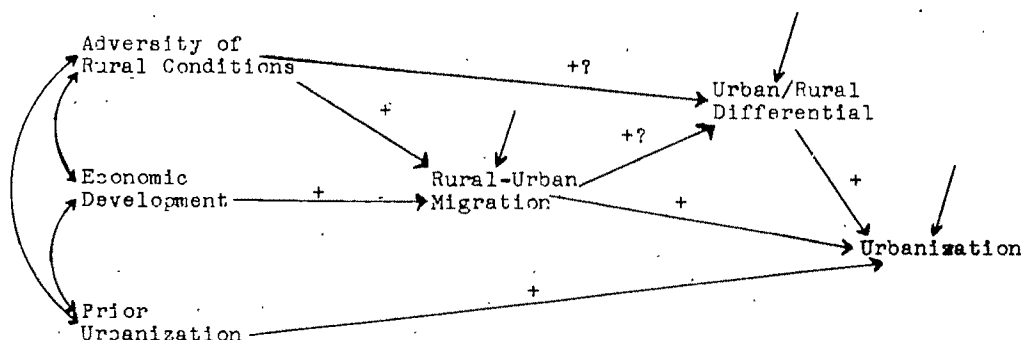


Figure 1. Path Diagram Depicting the Intervening Variables, and the Expected Signs, in the Relationship between Rural Conditions and Urbanization

between-region migration can distort the effects of the independent variables. Suppose, for example, that agricultural density does stimulate rural-urban migration, but that much of the migration is from high density to low density regions. In this case, the relationship between agricultural density and urbanization across regions would understate the actual effect of agricultural density.

The unit of analysis in this study is the nation. This unit is not perfect, but it has two important advantages. First, national boundaries often act as barriers to migration, and most rural-urban migration is internal to nations. Second, the most comprehensive data are available at this level. We want data for Asia and Latin America; since land constraints (due to high agricultural density and/or unequal forms of land tenure) are most severe there, this is the area where adverse rural conditions are most likely to affect urbanization (Hauser, 1957; Shaw, 1976). Reasonably reliable data on urbanization, economic development, and land constraint are available for almost all this area, if we use nations as the unit of analysis.

Deficiencies in Previous Studies

Empirical studies of the effect of rural conditions on urbanization in underdeveloped nations have yielded mixed, and controversial, results. Consider agricultural density (measured by farmer/land ratio), for example:

Our findings support the common-sense argument that a population's response to high agricultural density from increasing population is to cultivate the land more intensively rather than to abandon agriculture and move to urban areas. (Kumar, 1973:210)

[T]hat there is no positive correlation between rural pressure and urbanization has . . . been conclusively demonstrated. (Bussey, 1973:5)

The cross-national analyses of Sovani (1964) and Kamerschen (1969) support this view.

Others, however, have as confidently attested to the importance of agricultural density for urbanization in underdeveloped nations: "[T]hroughout Southeast

Asia the overwhelming cause of rural-urban migration is the existence of a stagnating rural economy typified by land shortage" (Jackson, 1974:25). The cross-national analyses of Davis and Golden (1954) and Long (1975) are substantially consistent with this view.

Why these discrepancies in findings? Methodological deficiencies cast suspicion on many of these findings (Firebaugh, 1976:chap. 1). Some researchers have pointed to the nonsignificant or negative *bivariate* relationship between agricultural density and percent urban as inconsistent with the land constraint thesis (Sovani, 1964; Kamerschen, 1969: 240). Such a conclusion is tenuous, since the bivariate relationship between agricultural density and percent urban neglects the confounding influences of important variables such as economic development. In addition, both bivariate and multivariate analyses of rural push are flawed by poorly defined sampling universes. Analyses of the effect of agricultural density on percent urban have included developed as well as underdeveloped nations. Since we do not expect agricultural density currently to affect urbanization in developed nations (see above), including developed nations would likely camouflage effects of agricultural density.

As remedies for these deficiencies, this analysis (1) employs a regression model of urbanization which includes controls for economic development and nation-specific historical and geographical factors, and (2) restricts the sample to underdeveloped nations in Asia and Latin America.¹⁰

¹⁰ Various empirical criteria have been advanced for identifying underdeveloped nations but none has gained universal acceptance. For this analysis I used Mexico as the cutoff point: nations at or below Mexico's level of economic development (as measured by the economic index used in this analysis) were considered underdeveloped. These nations are Afghanistan, Bolivia, Brazil, Burma, Ceylon, China, Columbia, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, India, Indonesia, South Korea, Mexico, Nepal, Nicaragua, East Pakistan, West Pakistan, Paraguay, Peru, Philippines, Thailand, Turkey. Nations with no rural populations, as well as very small nations and principalities, were omitted. Desert nations were ana-

Overview of the Model

The general form of the model of urbanization is:

$$U = f(E, R, H-G), \quad (1)$$

where U refers to urbanization, E to economic development, R to rural conditions, and $H-G$ to nation-specific historical and geographical factors. Since one does not expect their effects to be immediate, the independent variables were lagged ten years. Other lag lengths were tried; however, since structural conditions such as economic development are highly correlated across time, the estimates differ little over these alternative specifications.

The model is applied to underdeveloped nations in Asia and Latin America for the period 1950–1970. The choice of 1950–1970 was dictated by the fact that rural population increase in these nations has been especially rapid since about 1950 and by the absence of reliable data on agricultural density before 1950. The data are by decades: 1950, 1960, and 1970. Data for shorter intervals are not available for many of the variables; even if they were, due to the stability of these variables over short periods of time, little analytical leverage would be gained by collecting more observations in the 1950–1970 interval (Hannan and Young, 1977). The analysis, then, is based on 54 cases: 27 nations, each at two points in time (1960 and 1970 for the dependent variable, 1950 and 1960 for the other variables).

Like most panel analyses in sociology, this analysis is based more on covariance across units than across time; stated differently, the analysis is more cross-sectional than longitudinal. Cross-sectional analyses of nations are especially susceptible to spurious findings stemming from the different histories and geographies of nations. For example, Lieberman and Hansen (1974) showed that, while economic development and language diversity are inversely related across nations, they are unrelated across time within nations. They interpreted this

discrepancy in terms of the historical circumstances surrounding nation formation: newer nations tend to be both less developed and less able to design their national boundaries to coincide with language boundaries. This is a particular illustration of a general moral: Cross-national analyses can yield seriously misleading results due to uncontrolled historical and geographical factors, while time-series studies in effect can “control” these factors by focusing on units with constant geographies and histories. In cross-sectional analyses, then, it is important to include controls for these factors.

Measurement of Variables

Secondary analyses of cross-national data are beset with difficulties. Difficulties attend data collection (for example, the problem of data comparability across nations) as well as data analysis (for example, nonlinearities). Secondary analyses can be especially vulnerable to error introduced in data collection: decisions made at that stage cannot be recovered completely, while data analysis problems often can be, if not sidestepped, at least evaluated (see below). Fortunately, data collection problems have been minimized for the present study by Kingsley Davis and his associates at the University of California-Berkeley's International Population and Urban Research center, whose careful efforts have yielded comparable cross-national data on the two key variables in this study: urbanization and agricultural density. The remaining data are primarily from United Nations sources; where possible these were cross-checked with other sources. I judge, then, that the study undertaken here is quite reasonable, particularly since the theses being tested specify only the direction of effects and not their exact size. We now look at the measures in more detail.

Urbanization. Since our interest here is the predominant character (urban vs. rural) of a region and not its number of urban residents, our dependent variable is percent urban.¹¹ Data for “urban areas”

lyzed separately (Firebaugh, 1976). Cambodia, Laos, Vietnam and North Korea were omitted because of inadequate data.

¹¹ If we were interested instead in the determinants of number of urban residents in a nation, an

(the political city plus adjacent suburbs) are used where possible, thereby reducing measurement error due to annexation. I chose 100,000+ as the criterion for "urban" in this analysis (from Davis, 1969: Table C); as we will see later, basic conclusions are unaffected by the use of another cutoff point.

Economic development. Economic development is measured by an index formed by summing per capita annual energy consumption (in terms of kilograms coal equivalent; from United Nations, 1929ff) and number of telephones per capita (from Banks, 1971, and American Telephone and Telegraph, 1972); these were standardized to unit variance before summing. Energy consumption is closely tied to the aggregate capacity and actual output of an economy. However, I want the index to reflect the distribution of production as well as its aggregate level since, as noted above, highly concentrated growth has been ineffective in generating urban employment opportunities for the masses in the Third World. I selected telephones to measure this distributional aspect of economic development, since others (for example, Cutright et al., 1976) have argued that a wealthy elite is unlikely to "overconsume" telephones. However, I found, as many others have, that various measures of economic development (GNP, energy consumption, telephones, etc.) are so highly correlated across nations that results are not dependent on the particular economic measure selected.¹²

Rural conditions. Agricultural density, the number of farmers relative to land under cultivation, is commonly used as a measure of land constraint (Kamerschen, 1969; Kumar, 1973; Long, 1975). The numerator used for this person-land ratio

is the number of males in the agricultural labor force; the exclusion of females is necessitated by the failure of most countries to report female participation in agriculture. As Kumar (1973) argued, the denominator of this measure should not include all rural land but only that which is under tillage or lying fallow. The measure of agricultural density used in this analysis, therefore, is number of agriculturally employed males per square kilometer of arable land (taken from Kumar, 1973). Table 1 gives the mean agricultural densities of nations in selected regions. Since this measure is skewed to the right (skew=1.4), it was transformed by the natural logarithm (skew=-.2). Unfortunately, agricultural density data are unavailable for four of the 27 nations (eight of the 54 cases); however, as we will see below, this apparently does not affect the results.

Since the amount of land required to support a given number of farmers can vary from nation to nation, agricultural density per se is an incomplete indicator of population pressure. Soil quality, topography, rainfall, and length of growing season all affect the carrying capacity of land. In addition to such natural resource differences, nations can differ on social organizational and technological factors related to agriculture.

Besides agricultural density and land tenure, then, I included the following measures of rural conditions in a preliminary analysis (not reported here): agricultural mechanization, agricultural produc-

Table 1. Mean Agricultural Density of Nations: Selected Regions, 1950 and 1960^a

Region	N	Agricultural Density	
		1950	1960
Asia ^b	11	87.1	90.5
Latin America ^b	13	50.6	49.4
Europe	22	29.5	25.6
North America	2	3.4	2.3
All Developed Nations	34	28.1	23.7

Source: computed from Kumar, 1973: Appendix Table VII.

^a Agricultural density is number of agricultural workers per square kilometer of arable land. The means reported are not weighted by size of nation.

^b Developed countries excluded.

analysis without ratio variables would be preferable: in such a case national population should be used as an independent variable, not as a denominator (Schuessler, 1974).

¹² The energy+telephones index was skewed to the right and nonlinear with respect to urbanization. The best transformation, in terms of reducing skew and producing linearity, is $(\ln [\text{index}])^2$, where \ln is the natural logarithm function. This is the transformation used in the results reported here; parallel analyses using other transformations yielded similar results.

tion (agricultural gross domestic product, in constant U.S. dollars, divided by agricultural population; from Food and Agricultural Organization, 1971b: Annex), and production instability (an index of fluctuations in agricultural production, 1952–1972; from F.O.A., 1974:141). I expected agricultural mechanization to have a positive effect on urbanization, since mechanized agriculture requires less labor. I found, however, that agricultural mechanization and economic development are so highly correlated that measures for the former are superfluous. I selected agricultural production as a proxy for natural resources (collecting and coding cross-national data on resources like soil quality and drainage characteristics would require a herculean effort); with measures of amount of land per farmer (agricultural density), agricultural technology, and land tenure already in the model, effects of agricultural production should be due predominantly to cross-national differences in natural resources. Finally, I reasoned that, where production is uncertain, farmers—rich or poor—may emigrate (indeed, complete crop failures may leave farmers with little choice). Contrary to expectations, neither production level nor production stability affected urbanization in a consistent manner.

Cross-national data on land tenure are so crude that I could do no better than classify nations by their predominant form of land tenure. I relied on two sources for this classification: where possible, the 1960 World Census of Agriculture (Food and Agricultural Organization, 1971a); otherwise, Adelman and Morris (1967). The 1960 census of agriculture included data on size and type of land holdings. Adelman and Morris used experts to categorize nations according to their predominant form of land tenure. From these data I was able to construct four categories: owner-operated, tenant- or renter-operated, communist, and plantation. These were entered in the model as dummy variables.

Historical and geographical effects. Idiosyncratic characteristics or experiences of a given nation may facilitate or impede urbanization. These characteristics may be historical (colonial ex-

periences, for example) or geographical (presence of natural harbors, for example). As we noted above, such effects must be controlled in cross-sectional analysis.

Realistically one cannot quantify geographical and historical conditions directly. How then does one control such effects? Note that geographical and historical factors (1) typically are long-standing national features and (2) likely are more important to initial urbanization than to later urbanization. Indeed, we might expect most of the effects of geographical and historical conditions on 1960 and 1970 urbanization to be mediated by earlier urbanization. This suggests prior urbanization as a control for geographical and historical effects on urbanization.¹³ I selected 1930 urbanization (from Banks, 1971) for this purpose (reliable data on urbanization are unavailable before then for some of the nations).

FINDINGS

Each of the 27 nations has data at two points in time, so the analysis consists of 54 cases. Since there is no theoretical or empirical reason to believe the parameters are different in 1960 and 1970, I combined (pooled) the cross-sectional and time-series data. Pooling increases the accuracy of the estimates (Hannan and Young, 1977). Pooled data are of the general form:

$$Y_{it} = \alpha + \beta X_{i,t-k} + \epsilon_{it} \quad (2)$$

¹³ For general discussions of controlling for prior levels of the dependent variable as a means of avoiding spurious effects, see Heise (1970) and Carlsson (1972). Liberson and Hansen's (1974) proposal for handling cross-sectional bias—to control for date of national independence—is tantamount to controlling for prior levels of the dependent variable since, in their case, date of independence is highly correlated with prior levels of the dependent variable.

Cross-sectional bias could be averted here in two other ways. First, I could include dummy variables for nations, thereby controlling for *all* nation-specific effects (Firebaugh, forthcoming). However, this approach would require 26 dummy variables, with the result that the number of parameters to be estimated would be uncomfortably close to the number of cases. Second, I could use change variables. However, employing change variables is inadvisable here since it would (1) halve the number of cases, leading to a severe loss of efficiency, and (2) magnify measurement error (Bohrnstedt, 1969).

where Y_{it} is the value of Y for the i^{th} unit at time t , $X_{i, t-k}$ is the value of X for the i^{th} unit at time $t-k$, and k is the length of the lag. In this analysis, i =nation 1, nation 2, . . . , nation 27; t =1960, 1970; and k =10 years. Note also that in this analysis the dependent variable at a previous point in time is included as an explanatory variable. Hence the model used here is a type of panel model (Heise, 1970). The use of panel analysis is often advocated in cross-national research as a means for reducing the possibility of "simultaneity bias" due to reciprocal effects (Chase-Dunn, 1975; Delacroix and Ragin, 1978).

Table 2 presents zero-order correlations between the variables used in this analysis. Observe first the correlates of the dependent variable. As expected, urbanization is highly correlated with prior urbanization and economic development; economic development alone accounts for roughly two-thirds of the variance in urbanization. Urbanization is *negatively* correlated with agricultural density ($r = -.32$). This is not surprising, since other studies report a negative relationship. The zero-order correlations also tell us that, in this population, communist nations and nations characterized by plantation agriculture are more urban than those where the majority of farms are owner-operated or tenant. Turning now to the correlations between independent variables, we can see that economic development and ag-

Table 3. Determinants of Urbanization in Asia and Latin America, 1960 and 1970 (Pooled)

Independent Variable	Regression Coefficient	
	Metric	Standardized
% Urban, 1930	.35	.17
Economic Development ^a	.71	.80
Agricultural Density ^a	3.0	.24
Plantation Agriculture (yes=1, no=0)	2.5	.12
R^2	.74 (.71) ^b	

^a Transformed (see text) and lagged ten years.

^b Adjusted for degrees of freedom.

ricultural density are negatively related ($r = -.60$). Note also that, compared with many cross-national analyses, the correlations between the independent variables generally are small; only two exceed 1.51. Hence multicollinearity is not a problem here.

Table 3 presents the independent effects of prior urbanization, economic development, and rural conditions on urbanization.¹⁴ Economic development has by far the largest effect, but agricultural density, prior urbanization, and plantation agriculture also have nontrivial positive effects on urbanization. These four variables account for nearly three-fourths of the variance in urbanization. The other forms of land tenure (communist, owner-operated, tenant) have no independent effects on urbanization.

Table 2. Zero-Order Correlations among Variables for the Additive Model, 1960 and 1970 (Pooled)^a

	% Urban	% Urban 1930	Economic Development	Agricultural Density
% Urban, 1930	.66			
Economic Development ^b	.82	.69		
Agricultural Density ^{b, c}	-.32	-.32	-.60	
Communist ^d	.22	.29	.28	-.11
Owner-Operated ^d	-.35	-.18	-.34	.09
Tenant/Renter ^d	-.28	-.21	-.33	.30
Plantation ^d	.40	.11	.38	-.19

^a $N=54$, except where otherwise noted.

^b Transformed (see text) and lagged ten years.

^c Correlations based on 46 cases.

^d Dummy variable: yes=1, no=0.

¹⁴ Ordinary least squares regression was used here and in the tables which follow (except where noted otherwise). Assuming no autocorrelation of the residuals, OLS is the recommended estimator in models which incorporate lagged Y among the explanatory variables (Johnston, 1972:306-7). Unfortunately, the assumption of no autocorrelation of ϵ could not be assessed empirically, since conventional tests for autocorrelation are not appropriate in models containing lagged Y values (Johnston, 1972:309). This assumption appears reasonable here, however, since (1) the data are predominantly cross-sectional and (2) prior urbanization was included for the purpose of controlling for the very types of effects which would result in autocorrelation of the residuals. If this assumption is wrong—that is, if ϵ is autocorrelated—then the effect of prior urbanization will be overstated while effects of variables positively correlated with prior urbanization will be understated (Hannan and Young, 1977). This bias would not affect estimates of the effects of rural conditions, however, since these are minimally correlated with prior urbanization ($r^2 = .09$ between agricultural density and prior urbanization: Table 2).

In short, the results from the additive model are consistent with the thesis that adverse rural conditions affect urbanization independent of economic development.

Interaction Model

Do prior urbanization, economic development, and rural conditions have the same effect on urbanization in Asia as in Latin America? The additive model above assumes that they do. But we may question this assumption, particularly with respect to agricultural density. In addition to rural-urban migration, rural populations can respond to rapid growth by frontier development and by involution (see above). In general, opportunities for the agricultural labor force, short of emigration, appear greater in Latin America than in Asia. Since alternatives to migration may be less available in Asia, the effect of agricultural density on urbanization may be greater there.

I examined these possibilities by using a model with regional interaction terms—that is, terms which allow for the effects to differ between Asia and Latin America. Table 4 reports the results. The interaction model fits slightly better than the additive model (note the R^2 's). More important, the expected interaction effect appears for agricultural density: the effect of agricultural density is greater in Asia

than in Latin America ($b = 3.3$ vs. 2.4). In addition, the effect of prior urbanization differs by region: it is inconsequential in Asia, but not in Latin America. However, no interaction effect appears for economic development. Finally, as in the additive model, the only form of land tenure to affect urbanization is plantation agriculture. All these effects are statistically significant at the .05 level or better.¹⁵ We now consider each of them in more detail.

Economic development. Numerous cross-national studies report a large positive *bivariate* relationship between urbanization and economic development. Table 4 indicates that this relationship remains very strong even with controls for rural conditions and prior urbanization. Hence these results support the view that economic development and urbanization are closely tied, though they do not support the view that economic development is the sole determinant of urbanization.

Prior urbanization. 1930 urbanization was employed as a proxy for nation-specific historical and geographical factors which affect urbanization. In particular, one expects colonial policy to have an abiding effect on urbanization. Both Asia and Latin America were colonized extensively. However, 1930 urbanization has no effect on recent urbanization in Asia, and surprisingly little effect in Latin America ($\beta = .20$). The bivariate relationship between 1930 urbanization and recent urbanization ($r = .66$) is severely attenuated by controls for economic development and rural conditions. Apparently the recent urbanization of Asia and Latin America is more dependent on contemporary factors than on the historical experiences of nations.

Rural conditions. Plantation agriculture has a positive effect on urbanization in these nations. In two nations alike in economic development, prior urbanization, and agricultural density, we expect percent urban to be higher by 3.3 in the nation dominated by plantation agriculture ($b = 3.3$; since plantation agriculture is a dummy variable this is not a slope but rather an increment to the y-intercept).

Table 4. Determinants of Urbanization in Asia and Latin America, 1960 and 1970 (Pooled): Interaction Model

Independent Variable	Regression Coefficient	
	Metric	Standardized
% Urban, 1930:		
Asia	— ^b	—
Latin America	.39	.24
Economic Development: ^a		
Asia	.78	.88
Latin America	.78	.88
Agricultural Density: ^a		
Asia	3.3	.27
Latin America	2.4	.19
Plantation Agriculture (yes=1, no=0)	3.3	.16
R^2	.76 (.73) ^c	

^a Transformed (see text) and lagged ten years.

^b Trivial.

^c Adjusted for degrees of freedom.

¹⁵ I do not emphasize significance levels since the data comprise a population, not a sample.

Table 5. Determinants of Urbanization in Asia and Latin America: Metric Regression Coefficients for Alternative Specifications

Independent Variable	(1)	(2)	Model (3)	(4)	(5)
	Baseline (Tables 3-4)	Listwise Deletion (N=46)	Year Controlled	Reciprocal Effects ^a	Smaller Cities Included
Additive Effects					
% Urban, 1930	.35	.33	.36	.41	— ^d
Economic Development ^b	.71	.69	.79	.63	1.7
Agricultural Density ^c	3.0	2.8	3.0	2.5	3.3
Plantation Agriculture (yes=1, no=0)	2.5	2.7	2.6	2.2	8.7
Interaction Effects					
% Urban, 1930:					
Asia	— ^d	—	—	—	—
Latin America	.39	.34	.37	.43	.16
Economic Development: ^b					
Asia	.78	.75	.79	.65	1.5
Latin America	.78	.75	.79	.65	1.5
Agricultural Density: ^c					
Asia	3.3	3.0	3.3	2.6	2.3
Latin America	2.4	2.2	2.4	2.0	3.2
Plantation Agriculture (yes=1, no=0)	3.3	3.3	3.2	2.5	8.0

^a Estimated by two-stage least squares employing the following simultaneous equation model:

$$U_t = f(E_t, D_{t-10}, \text{prior urbanization, plantation agriculture});$$

$$E_t = f(E_{t-10}, U_t),$$

where U refers to urbanization, E to economic development, D to agricultural density, and t to 1960, 1970.

^b Transformed (see text) and lagged ten years (except in reciprocal effects model).

^c Transformed (see text) and lagged ten years.

^d Trivial.

Agricultural density also has a significant, positive effect on urbanization. This effect is greater in Asia than in Latin America. Since these findings about rural conditions are contrary to the findings of most previous studies, we examine their robustness under still other specifications.

Other Specifications

I respecified the model in a number of ways to gauge the stability of the estimates.¹⁶ The respecifications yielded results consistent with those of the baseline models of Tables 3 and 4. Table 5 reports results for specifications motivated by the comments of reviewers. One's conclu-

sions are the same whether one compares the metric or standardized coefficients; in Table 5 I follow convention and report the metric coefficients. In the first respecification, the eight cases with missing data are excluded (Listwise Deletion: Table 5). Note that the coefficients for this model are consistent with those of both baseline models, the additive model (top panel, Table 5) and the interaction model (bottom panel, Table 5). The results, then, do not depend on the method of handling missing data. In the second respecification (Year Controlled) I included a dummy variable for year. Under this specification the coefficients are *within-year* slopes (Duncan et al., 1961:65-6, 166-8). Again, the estimates barely differ from those of the baseline models.

As noted above, panel analysis is often advocated as a means of reducing the possibility of bias due to reciprocal effects. This method is not foolproof, how-

¹⁶ I also used scattergrams to check nonlinearities, outliers, etc., in both the zero-order and partial relationships, and found no problems in the variables as transformed.

ever (Hannan and Young, 1977).¹⁷ To check for simultaneity bias, I employed simultaneous equation models; these estimate reciprocal effects directly. Feedback effects from urbanization to economic development and agricultural density seem possible; feedback effects on land tenure system and prior urbanization seem unlikely. I began, then, with a simultaneous equation model which allowed for reciprocal effects between urbanization and economic development, and urbanization and agricultural density. Two-stage least squares estimates were β (standardized regression coefficient) = .08 for the effect of urbanization on economic development and β = .0002 for its effect on agricultural density. Obviously the feedback effect of urbanization on agricultural density safely can be ignored; this permits a simpler model (since agricultural density need not be treated as endogenous) with urbanization and economic development as the endogenous variables (Table 5, note a). Table 5 (Reciprocal Effects) reports the two-stage least squares estimates for the urbanization equation in this model. These estimates show no significant departures from previous results, albeit the effects of economic development and rural conditions are slightly attenuated. Finally, I examined the effects

of rural conditions on an urbanization measure which includes urban areas smaller than 100,000. I again used data from Davis (1969:Table C); these data are based on urban areas as defined by each nation (typically at least 2,000). The final column in Table 5 reports estimates for the additive and interaction models applied to this more inclusive measure of urbanization. The effects of economic development and plantation agriculture are greater in this case, while the effects of prior urbanization, and agricultural density in Asia, are smaller. Nevertheless, the basic pattern of effects remains. In short, the alternative models provide further support for the contention that agricultural density and plantation agriculture have independent, positive effects on urbanization in underdeveloped nations in Asia and Latin America.

DISCUSSION

The overarching conclusion of this analysis is that a theory of urbanization of underdeveloped nations must take into account conditions on the farm as well as conditions in the city. Specifically, we found that agricultural density and plantation agriculture affect urbanization in the underdeveloped nations in Asia and Latin America.¹⁸

Can we conclude from this finding that Asian and Latin American nations are overurbanized—that is, more urban than warranted by their level of economic development? (That Asian and Latin American nations are overurbanized is a popular contention in demography, geography, ecology, and political science, as well as in sociology; see Bairoch, 1975: chap. 8, and Firebaugh, 1976:chap. 1.) The land constraint thesis is indeed a key plank in the overurbanization argument (Sovani, 1964). Rural-urban migration due to land constraint, however, is not a sufficient condition for overurbanization; we should

¹⁷ In panel analysis the lag length of the dependent variable is typically the same as that of the other variables. Using different lag lengths, as here, could make one more susceptible to simultaneity bias. However, bear in mind that in this analysis prior urbanization is used not only as a hedge against simultaneity bias but also as a measure of nation-specific factors which affect urbanization. I used 1930 urbanization because I judged early urbanization to be a purer measure of these nation-specific factors. In any case, I examined the effect of prior urbanization under various lag lengths. As one would expect, the shorter the lag the larger the effect attributed to prior urbanization; the additive effect of 1950 urbanization, for example, is $b = .81$ (as opposed to .35; Table 3). Using 1950 urbanization reduces the estimate of the effect of economic development (from .71 to .43); the estimates for agricultural density and plantation agriculture are barely affected. Other lag specifications for urbanization followed this pattern—that is, shorter lags increased the estimates for prior urbanization and decreased the estimates for economic development—but in all cases the estimates for economic development, plantation agriculture, and agricultural density were positive and nontrivial.

¹⁸ I do not expect an amelioration of these conditions in the near future, particularly in view of the relative neglect of agriculture in the development programs of many underdeveloped countries (see Lipton, 1977, for a detailed discussion of the urban bias present in development strategies of underdeveloped countries).

not assume that push migration (that is, migration stemming from deficiencies in the rural sending areas rather than from the attractions of the urban receiving areas) necessarily leads to a harmful imbalance between level of urbanization and level of economic growth. First, empirical tests for imbalance between level of urbanization and level of economic development have faltered in that they have been unable to determine the "proper" balance between urbanization and economic development. Second, even if sociologists could show that rural push leads to an imbalanced condition between urbanization and economic development, such evidence would not demonstrate that unfortunate urban conditions in underdeveloped nations are solely or substantially attributable to this imbalance (overurbanization theory alleges that imbalance between urbanization and economic development is a principal contributor to urban woes in underdeveloped nations: see Hauser, 1957:chap. 2). Further analysis would be needed to eliminate alternative hypotheses. Third, note that the alternative to overurbanization may be worse than overurbanization. If the "excess" people do not reside in urban areas, then they must reside in nonurban areas. Overpopulation in rural areas may well be more detrimental to a nation than overpopulation in urban areas (Keyfitz, 1965:290).

CONCLUSION

Economic development is no doubt the most important determinant of urbanization. The findings of this analysis imply, however, that urbanization theory should focus on rural as well as urban conditions. Ideally, a theory of urbanization would apply both to developed and to underdeveloped nations. I suggest that this is possible in a theory which incorporates (1) the sources of rural constraints (increasing population? form of land tenure? increasing scale of agriculture?) and (2) the alternatives to rural-urban migration. Developing such a general structural theory of urbanization is the logical next step in the study of the urbanization of nations.

REFERENCES

- Adelman, Irma and Cynthia T. Morris
1967 *Society, Politics, and Economic Development*. Baltimore: Johns Hopkins Press.
- Ali, Karamat
1979 *Agricultural Modernization and Human Fertility in Developing Countries*. Ph.D. dissertation, Department of Sociology, Vanderbilt University.
- American Telephone and Telegraph
1972 *The World's Telephones*. Bedminster: American Telephone and Telegraph.
- Bairoch, Paul
1975 *The Economic Development of the Third World Since 1900*. Berkeley: University of California Press.
- Banks, Arthur S.
1971 *Cross-Polity Time Series Data*. Cambridge, Ma.: MIT Press.
- Barracough, Solon and Jacobo Schatan
1973 "Technological policy and agricultural development." *Land Economics* 49:175-94.
- Beckford, George L.
1972 *Persistent Poverty: Underdevelopment in Plantation Economies of the Third World*. London: Oxford University Press.
- Berliner, Joseph S.
1977 "Internal migration: a comparative disciplinary view." Chap. 23 in Alan A. Brown and Egon Neuberger (eds.), *Internal Migration: A Comparative Perspective*. New York: Academic Press.
- Bohrnstedt, George
1969 "Observations on the measurement of change." Chap. 4 in Edgar F. Borgatta (ed.), *Sociological Methodology 1969*. San Francisco: Jossey-Bass.
- Boserup, Ester
1965 *The Conditions of Agricultural Growth*. Chicago: Aldine.
- Breese, Gerald
1966 *Urbanization in Newly Developing Countries*. Englewood Cliffs: Prentice-Hall.
- Bussey, Ellen M.
1973 *The Flight from Poverty—How Nations Cope*. Lexington: Lexington-Heath.
- Carlsson, Gösta
1972 "Lagged structures and cross-sectional methods." *Acta Sociologica* 15:323-41.
- Chase-Dunn, Christopher
1975 "The effects of international economic dependence on development and inequality: a cross-national study." *American Sociological Review* 40:720-38.
- Cutright, Phillips, Michael Hout and David R. Johnson
1976 "Structural determinants of fertility in Latin America: 1800-1970." *American Sociological Review* 41:511-27.
- Davis, Kingsley
1969 *Basic Data for Cities, Countries, and Regions. World Urbanization 1950-1970, Vol. 1*. Berkeley: Institute of International Studies, University of California.
- 1972 *Analysis of Trends, Relationships, and Development. World Urbanization 1950-*

- 1970, Vol. 2. Berkeley: Institute of International Studies, University of California.
- 1973 "Burgeoning cities in rural countries." Pp. 219-23 in Kingsley Davis (ed.), *Cities: Their Origin, Growth and Human Impact*. San Francisco: W. H. Freeman/Scientific American.
- 1975 "Asia's cities: problems and options." *Population and Development Review* 1:71-86.
- Davis, Kingsley and Hilda Hertz Golden
1954 "Urbanization and the development of pre-industrial areas." *Economic Development and Cultural Change* 3:6-26.
- Delacroix, Jacques and Charles Ragin
1978 "Modernizing institutions, mobilization, and Third World development: a cross-national study." *American Journal of Sociology* 84:123-50.
- Dorner, Peter
1972 *Land Reform and Economic Development*. Baltimore: Penguin Books.
- Duncan, Otis Dudley, Raymond P. Cuzzort and Beverly Duncan
1961 *Statistical Geography: Problems in Analyzing Areal Data*. Glencoe: Free Press.
- Firebaugh, Glenn
1976 *The Urbanization of Nations, 1950-1970: An Examination of the Theory of "Overurbanization."* Ph.D. dissertation, Department of Sociology, Indiana University, Bloomington.
- Forthcoming "Assessing group effects: a comparison of two methods." *Sociological Methods and Research*.
- Fischer, Claude S.
1972 "Urbanism as a way of life: a review and an agenda." *Sociological Methods and Research* 1:187-242.
- Food and Agricultural Organization
1971a *Analysis and International Comparison of Results. Report on the 1960 World Census of Agriculture, Vol. 5*. Rome: FAO.
1971b *State of Food and Agriculture*. Rome: FAO.
1974 *State of Food Agriculture*. Rome: FAO.
- Friedlander, Dov
1969 "Demographic responses and population change." *Demography* 6:359-81.
- Galle, Omer and Walter Gove
1978 "Overcrowding, isolation, and human behavior: exploring the extremes in population distribution." Chap. 6 in Karl Taeuber, Larry Bumpass and James Sweet (eds.), *Social Demography*. New York: Academic Press.
- Geertz, Clifford
1963 *Agricultural Involution*. Berkeley: University of California Press.
- Hannan, Michael and Alice Young
1977 "Estimation in panel models: results on pooling cross-sections and time series." Chap. 2 in David R. Heise (eds.), *Sociological Methodology 1977*. San Francisco: Jossey-Bass.
- Harris, John R. and Michael P. Todaro
1970 "Migration, unemployment and development: a two-sector analysis." *American Economic Review* 60:126-42.
- Heise, David R.
1970 "Causal inference from panel data." Chap. 1 in Edgar R. Borgatta and George W. Bohrnstedt (eds.), *Sociological Methodology 1970*. San Francisco: Jossey-Bass.
- Hobsbawm, Eric J. and George Rudé
1968 *Captain Swing*. New York: Pantheon Books.
- Jackson, J. C.
1974 "Urban squatters in Southeast Asia." *Geography* 59:24-30.
- Johnston, John
1972 *Econometric Methods*. New York: McGraw-Hill.
- Jones, Gareth Stedman
1971 *Outcast London: A Study in the Relationship Between Classes in Victorian Society*. London: Oxford University Press.
- Kamerschen, David R.
1969 "Further analysis of overurbanization." *Economic Development and Cultural Change* 17:235-53.
- Keyfitz, Nathan
1965 "Political-economic aspects of urbanization in South and Southeast Asia." Pp. 265-309 in Philip M. Hauser and Leo F. Schnore (eds.), *The Study of Urbanization*. New York: Wiley.
- Kocher, James E.
1973 *Rural Development, Income Distribution, and Fertility Decline*. New York: Population Council.
- Kumar, Joginder
1973 *Population and Land in World Agriculture*. Berkeley: Institute of International Studies, University of California.
- Lappe, Frances M. and Joseph Collins
1977 *Food First*. Boston: Houghton Mifflin.
- Lee, Everett S.
1966 "A theory of migration." *Demography* 3:47-57.
- Liebertson, Stanley and Lynn K. Hansen
1974 "National development, mother tongue diversity, and the comparative study of nations." *American Sociological Review* 39:523-41.
- Lipton, Michael
1977 *Why People Stay Poor: Urban Bias in World Development*. Cambridge, Ma.: Harvard University Press.
- Long, John F.
1975 "A re-examination of the relationship between economic development and the rate of urbanization." Paper presented at the annual meeting of the Population Association of America, Seattle.
- McGee, T. G.
1971 *The Urbanization Process in the Third World*. London: G. Bell.
- Macisco, John J., Jr., and George C. Myers
1975 "Introduction: migration and fertility." *International Migration Review* 9:111-4.
- Martine, George
1975 "Migrant fertility adjustment and fertility

- growth in Latin America." *International Migration Review* 9:179-91.
- Munro, John M.
1974 "Migration in Turkey." *Economic Development and Cultural Change* 22:634-53.
- Schuessler, Karl F.
1974 "Analysis of ratio variables: opportunities and pitfalls." *American Journal of Sociology* 80:379-96.
- Shaw, R. Paul
1976 *Land Tenure and Rural Exodus in Chile, Columbia, Costa Rica, and Peru*. Gainesville: University of Florida Press.
- Sovani, N. V.
1964 "The analysis of 'overurbanization.'" *Economic Development and Cultural Change* 12:113-22.
- Spengler, Joseph J. and George C. Myers
1977 "Migration and economic development: today and yesterday." Chap. 2 in Alan A. Brown and Egon Neuberger (eds.), *Internal Migration: A Comparative Perspective*. New York: Academic Press.
- Thiesenhusen, William C.
1971 "Latin America's employment problem." *Science* 171:868-74.
- Todaro, Michael P.
1969 "A model of labor migration and urban unemployment in less developed countries." *American Economic Review* 59:138-48.
1977 *Economic Development in the Third World*. London: Longmans.
- Trewartha, Glenn T.
1969 *A Geography of Population: World Patterns*. New York: Wiley.
- United Nations
1929ff "World energy supplies." Series J. New York: U.N. Publications.
- 1973 *The Determinants and Consequences of Population Trends*. Vol. 1. New York: U.N. Publications.
- Wallerstein, Immanuel
1974 *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York: Academic Press.
- Weller, Robert H., John J. Macisco, Jr. and George R. Martine
1971 "The relative importance of the components of urban growth in Latin America." *Demography* 8:225-32.
- Wilber, Charles K.
1973 *The Political Economy of Development and Underdevelopment*. New York: Random House.
- Williams, Anne
1976 "Review and evaluation of the literature." Pp. 119-59 in Michael C. Keeley (ed.), *Population, Public Policy, and Economic Development*. New York: Praeger.
- Wirth, Louis
1938 "Urbanism as a way of life." *American Journal of Sociology* 44:3-24.
- Zarate, Alvan and Alicia Unger de Zarate
1975 "On the reconciliation of research findings of migrant-nonnigrant fertility differentials in urban areas." *International Migration Review* 9:115-56.
- Zelinsky, Wilbur, Leszek A. Kosinski and R. Mansell Prothero, eds.
1970 *Geography and a Crowding World: A Symposium on Population Pressures Upon Physical and Social Resources in the Developing Lands*. New York: Oxford University Press.

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Robin M. Williams, Jr., Department of Sociology, Cornell University, Ithaca, New York 14853.

VALUES, DISTRIBUTIVE JUSTICE AND SOCIAL CHANGE*

IRVING TALLMAN AND MARILYN IHINGER-TALLMAN

Washington State University

American Sociological Review 1979, Vol. 44 (April):216-235

Principles drawn from the exchange perspective are combined with generalizations drawn from bargaining, coalition and prisoner dilemma research to explain the effect of social structural conditions on collective values emphasizing material attainment vs. interpersonal satisfactions and norms of equality vs. norms of proportionality. The theory is applied to issues of social development. Materialistic values are predicted for poor and developing societies and interpersonal satisfaction values are predicted for industrialized societies. The theory also predicts that norms of equality and solidarity are more likely to develop in societies with simple class structures and norms of proportionality are more likely to develop with increasing structural complexity. Data from a study of Mexican and U. S. parents and their children are presented to support hypotheses drawn from the theory. Some of the criticisms of exchange theory as a basis for explaining the formation of social norms are examined and the utility of the theory's underlying individualistic and utilitarian assumptions are explored and defended.

Despite their growing popularity, exchange theories have had limited application as a basis for sociological explanations of social change (see, for example, Kuhn, 1974:427-46). This absence may be due to the inability of exchange theorists adequately to account for development and change in social values and norms. This is a formidable obstacle since values and norms have been interpreted consistently as either determinants or consequences of social development and change (Kahl, 1968; Inkeles, 1966; Rogers, 1969; Foster, 1967; Nash, 1967).

Although most exchange theorists view norms as critical in delimiting the types of rewards and costs acceptable in social exchanges, the processes by which such norms are formulated and altered frequently are viewed as external to the theory (Homans, 1961:115; Meeker, 1971; Cook, 1975; Blau, 1964:253-63; Thibaut and Kelley, 1959:127-30; Heath, 1976:50-74, 154-60). Even the attempt by Berger et al. (1972), to explicate carefully the structural aspects of distributive justice norms resorts to stipulating a "re-

ferential structure" whose source is unknown. Cook and Emerson (1978), using an exchange perspective, present data indicating that equity concerns place constraints on the use of power. Although the experiment they report provides specific structural conditions under which equity concerns will be expressed (e.g., imbalanced power relationships and knowledge of other's outcomes), the emergence of the equity norm itself is not explained, but rather is treated as a given amenable to activation under the specified conditions.¹ The fact that norms are culturally transmitted does not, in our view, serve as an explanation for their generation or demise (see Kuhn, 1974:431). What is needed is the specification of principles pertaining to the emergence of specific norms and the conditions under which transmissions occur.

Those who question the utility of the exchange perspective often point to its failure to deal effectively with issues of social order and social control. Moreover, this failure frequently is attributed to the individualistic and utilitarian assumptions

* Address all communications to: Irving Tallman; Department of Sociology; Washington State University; Pullman, WA 99164.

The theory and research reported in this paper was supported by National Institute of Mental Health grants (5 R01MH-15521 and 1 R01MH-26301) provided to the University of Minnesota Family Study Center.

¹ In a footnote, Cook and Emerson, however, do differentiate between proportional and equality formulations of equity and suggest that the latter are more likely to occur in two-party exchanges, whereas the former are more applicable when third parties play a role in distributing resources. This formulation is similar but not identical with the propositions we shall develop later in this paper.

underlying this perspective² (Ekeh, 1974; Heath, 1976; Buckley et al., 1974). "Morality," to paraphrase these critics, "cannot be explained on the basis of individual self-engrandizement."

Reports by Komarita and Chertkoff (1973) and Bonacich (1970; 1972; 1976), however, are suggestive of ways in which individualistic and utilitarian assumptions can combine with other exchange principles to explain norm formation and change within collectivities. Komarita and Chertkoff report that group norms pertaining to the distribution of rewards can be predicted from knowledge of the distribution of resources within a given group. Bonacich, in a series of studies in which the prisoners' dilemma situation is expanded to four-, five-, and six-person groups, has shown that when the dilemma is most pronounced (i.e., the conflict between individual benefits and collective well-being is greatest), norms of group solidarity are most likely to develop and be enforced. Both of these sets of findings suggest a relationship between structural conditions, perceived self-interest, and the development of social norms. More specifically, as we shall see below, the two sets of findings suggest a relationship between the distribution of resources, norms of equality or proportionality pertaining to such distributions and norms of group solidarity.

In this paper we shall use principles drawn from the above works within the exchange paradigm to explain how desig-

nated social structural conditions affect: (1) the value placed on life goals by members of a collectivity; and (2) the norms of distributive justice which evolve. The hypotheses developed are tested against data gathered in Mexico and the United States. Finally, the findings are related to current debates about the utility of exchange theory for explaining social change.

THEORETICAL FRAMEWORK

Our point of departure is an assumption which underlies most exchange and rational-choice models. We assume that human actors are satisfaction seekers and will choose those courses of action which, based on the information they have available, will increase their chances of attaining the benefits they desire at the least possible cost.³ Also implicit in the exchange perspective is the assumption that desired benefits are scarce and, therefore, people often are forced to choose between potentially satisfying goods. Such choices depend, in part, on actors' preferences (values) and, in part, on actors' subjective estimates of their chances for acquiring the desired goods (Camilleri et al., 1972). Since the goods people seek are obtained through transactions within the social structure, we infer that the two key variables—values and subjective probabilities—result from actors' perceptions of the opportunities available to them in the social structure to conduct favorable transactions. Our first task is to examine how the social structure influences the decision process. We then shall identify those elements in the structure

² Some exchange theorists respond to this criticism by denying the necessity for these assumptions (see Emerson, 1976:345-7). This is particularly true of those who rely heavily on principles drawn from operant psychology (Emerson, 1972; 1976; Homans, 1961). Space does not allow for a detailed discussion of this orientation as compared with exchange theories which draw more heavily on an economic model (Blau, 1964:168-86). To avoid an overly long explanation, we shall merely state that we are in agreement with Heath (1976:3) that implicit in the exchange perspective is the notion that actors make rational choices in exchange situations. This does not imply, however, that human beings consider the contingencies or follow the complex calculations depicted by decision and game theorists. Rather it implies that, within the social and personal constraints individuals have for making decisions, they make them in ways which they believe will be to their benefit (see Kuhn, 1974:115).

³ This assumption is essential not only to the theory developed here, but to most exchange, decision, game and coalition theories (see Heath, 1976:7-50). The assumption also is the basis for the criticism that the exchange perspective leads to tautological arguments in which "any action can be said to maximize someone's gain" (P. S. Cohen quoted in Emerson, 1976). We attempt to avoid this obvious danger by specifying structural conditions which are hypothesized to lead to adherence to specific values and norms. The assumption, as well as the exchange perspective, in our view is best understood as elements in a paradigm that provide a framework for building theories. The utility of the exchange perspective (and its underlying assumptions) can best be evaluated by assessing the utility of the theories it generates.

which influence the formation of values and norms of distributive justice, the latter representing some means of controlling the probability of outcome. The opportunity must exist for actors to initiate and respond to offers to engage in exchanges. Emerson applies the term *exchange relations* to such opportunity structures. These exchange relations continue over time and can be extended to include networks which connect actors to one another either socially, psychologically, or geographically. Every actor in an exchange network, however, is not necessarily connected with every other actor. All actors, therefore, do not have the same opportunities to initiate transactions or to respond to initiations. However, each actor in the network has the opportunity for transactions with at least one other actor in the network (Emerson, 1972).

Since an exchange network represents the sum total of exchange opportunities for an actor, and since those opportunities are dependent upon the actor's location or position in the network, we can consider the exchange network as analogous to that aspect of social structure which is of most concern to us (i.e., the opportunity structure for obtaining desired goods). We therefore shall use exchange network and social structure interchangeably.

Given the on-going nature of exchange relations, actors are not likely to base their decisions entirely on the benefits to be obtained from immediate transactions but also will consider the payoffs and costs resulting from transactions over time. It is probable, therefore, that actors, preferring to keep resources in reserve for future transactions, will not spend all of their resources in any single transaction. Moreover, since they cannot attain desired goals in isolation but are dependent on each other's resources, actors will have to consider mutual contingencies in contemplating transactions. Thus, it is unlikely that parties to a transaction will be able to maximize benefits and minimize costs in any absolute sense (see Buckley et al., 1974, for a detailed discussion of this point). Nevertheless, since desired goods are scarce, actors should be in competition for such goods.

It would seem that actors are on the horns of a dilemma. How can the various parties obtain what they want given mutual dependence, competitive goals, and a need to withhold resources? Clearly, all parties in the transaction cannot maximize their payoffs. If a transaction is to be completed, therefore, some coming to terms with what each party wants is necessary. This, we suggest, is accomplished through the process of bargaining.⁴ Research on bargaining indicates that through this process actors move from idealized to realistic probability estimates of what can be obtained in given exchange relations (see Patchen, 1970).

There is also evidence suggesting that actors enter into bargaining with preconceptions of the limits or range of exchange rates that they will consider acceptable (Komarita and Chertkoff, 1973; Ofshe and Ofshe, 1970a). That is, if the exchange rate demanded is too high or too low they will not complete the transaction. Such exchange rates are the product of transactions conducted over some time. They reflect both the value placed on specific goods by the social network and the agreed upon standards of fairness or justice adhered to by members of the network. In the following sections we shall seek to identify the specific structural variables which influence the formation of values and standards of distributive justice.

A. Social Structure and Value Formation

We shall restrict our use of the term *value* to mean a preferential ordering that is relatively stable over time. The qualification that preferences are stable is congruent with conventional meanings of the term *value* (Heath, 1976; Rokeach, 1973:248-71). Our conception of value thus excludes momentary fluctuations of preference reflecting physical or psycho-

⁴ The relevant literature and research related to this assumption includes not only the so-called rational theories of bargaining and negotiation (e.g., Bartos, 1972), but also work related to identity negotiation (Gergen and Taylor, 1969; Goffman, 1963; 1970; Weinstein and Deutschberger, 1963) and other forms of interpersonal exchange (Gergen, 1969; Jones et al., 1965).

logical reactions to deprivations and satiation. Our effort to explain the basis for actors' valuing some goods over others will be facilitated if we can generalize to types of goods. To this end, we adopt Emerson's (1972) concept of *Exchange Domain*. An exchange domain will signify that subset of goods which are viewed by actors as equally capable of satisfying specific needs; thus, each good within the domain is substitutable for the other.

We draw upon the economic principle of marginal utility to explain the basis upon which exchange domains are valued. Our use of marginal utility, however, depends upon human perceptions pertaining to the supply of goods rather than upon assumptions as to the actual supply. This reliance on perceptions allows us to avoid the unrealistic assumption that perfect knowledge exists about the available supply of goods. With this qualification in mind, we propose that the value of a domain varies directly with the perceived utility to an actor of the domain's goods. Utility is determined by the good's satisfying potential; and satisfying potential, in turn, is determined by: (1) the good's potential to please or satiate an actor if it is consumed or possessed, and (2) the good's availability to the actor. Since the domains we shall be concerned with have equally high need satisfaction potential, the consideration of point (1) above will not be relevant for our purposes. Thus, we conclude that the more scarce an actor perceives a domain to be, the more highly the domain will be valued. Applying the principle of diminishing utility, we propose that the more highly an actor values a domain, the more s/he will be willing to spend of his/her resources for additional units of the domain's goods up to some optimal point after which the actor's valuation of the domain declines and s/he will be willing to spend less for subsequent units. It is important to note, however, that the utility of a domain for an actor is not limited only to the satisfaction it provides through consumption or possession. If a domain is perceived as scarce by members of an exchange network it may be highly valued by actors even if they control large quantities of the domain's goods. This is because the actor who con-

trols large quantities of a scarce good is in a strong bargaining position. That is, s/he is in a position to demand more in goods and services from other actors in the network in exchange for units of the valued domain's goods than would be the case if such goods were plentiful or equally distributed. We shall discuss the reasons for this bargaining advantage below; our point here is simply that being in a strong bargaining position is a valued circumstance, and, therefore, a domain may be valued not only because of its scarcity to an actor, but also because of its perceived scarcity within the social structure.

Whereas scarcity/abundance is hypothesized as the key structural variable affecting the value placed on a domain by members of the social structure, the distribution of the domain's goods among the members of the structure is hypothesized as the key variable influencing the formation of norms of distributive justice.

B. Social Structure and Norm Formation

A reasonably safe generalization about observable social structures is that they are characterized by an unequal distribution of valued goods. As we previously noted, those who control greater amounts of the good are in a stronger bargaining position than those who control lesser amounts (Heath, 1976:24; Cook and Emerson, 1978). This is because the former have two advantages: first, they can withhold their resources longer than persons in weaker positions, and wait until they are satisfied with the rates of exchange; and, second, they have a competitive advantage for acquiring additional units of the desired goods (i.e., they are in a position to offer more of their resources for additional units of the desired good) than weaker competitors. However, since all members of a network are to some degree mutually dependent, some form of cooperation between at least a subset of the exchange network is necessary or no transactions will occur. This need for cooperation in an essentially competitive situation leads to the formation of coalitions. By forming a coalition, actors can pool their resources, thereby increasing the strength of their collective bargaining

position vis-à-vis other members of the social structure.

There is considerable support from coalition research with small ad hoc groups for the proposition that actors will seek to form coalitions with those others whom they believe can best facilitate improving their payoffs (Ofshe and Ofshe, 1970a; 1970b; Komarita and Chertkoff, 1973). It is important to note, however, that for the individual actor, payoffs are not only determined by forming a winning coalition but by the *share* or split each member of the coalition receives when a transaction is successfully completed. The decision as to how the reward is to be divided, as Komarita and Chertkoff (1973) demonstrate, may be determined by the bargaining process. They suggest that in bargaining situations actors implicitly or explicitly will estimate the most favorable outcome they can expect, the least favorable outcome, and the most probable outcome. These represent the parameters within which bargaining takes place; parameters which can be interpreted as distribution rules. Komarita and Chertkoff report that the distribution rules advocated by actors differ depending upon their bargaining strength. Thus, actors in weak positions (controlling few desired resources) advocate splitting the payoff equally among members of the coalition; and those in strong positions (controlling large amounts of desired resources) advocate splitting the payoff proportionately to the original resources held by members of the coalition. This finding is in accord with Robinson and Bell's (1978) *underdog principle* which holds that "... individuals who objectively benefit from the stratification system ... are more likely to judge its inequalities to be just," whereas, "... people who are objectively less well off are more likely to judge equality to be fair." Robinson and Bell present data from samples in England and the United States which generally support this principle.

The underdog principle, however, requires some qualification. There are data which suggest that economic conditions alone do not provide a sufficient explanation for people's adherence to equalitarian distribution norms (see Robinson and

Bell, 1978; Lane, 1959). Variations in such norms have been attributed to working conditions (Blauner, 1964), beliefs that are unique to specific cultures (Alford, 1963; Lipset, 1963; Robinson and Bell, 1978), and educational differences (Robinson and Bell, 1978). The recent work of Cook and Emerson (1978) offers the potential for subsuming these various findings under the stipulation that adherence to specific distribution norms depends not only upon one's resources, but also upon one's perception of available opportunities to form coalitions. They report that the norm of equity is activated when subjects are made aware of how resources have been distributed across the exchange network. They also found that actors who repeatedly engage in transactions with the same people constrain the use of their power advantage. Both of these findings indicate that opportunities to engage in transactions with other actors in the network affect the distribution rules which are applied.

Norms of Distributive Justice and Solidarity

An examination of all the possible combinations and complexities represented in extant social structures is beyond the scope of this paper. What we can do, however, is consider some key prototypes linked to aspects of social development.

Assume that in a given social network an actor (A) controls a large amount of resources desired by other actors in the network. These actors (B_1, B_2, \dots, B_n) are more numerous and all control small amounts of a good desired by A. B's are in competition with each other for their share of A's goods. This situation is analogous to the position of peasants raising the same crop in relation to a landowner or purchasing agent. It is also equivalent to unskilled, unorganized workers in a one-industry community. From the point of view of the actors involved this structure can be described as a two-class system. This type of a structure gives A a strong bargaining advantage. Given this monopolistic advantage A can offer any B a small inducement and feel virtually as-

sured that if B_1 does not accept, B_2 or B_n will. One solution for B's would be to form a coalition against A. Such a coalition would depend upon the structural opportunities provided B's to interact with each other. Peasants living in villages, for example, should have a greater opportunity to form coalitions than peasants living in isolated land tracts. Given such opportunities, the coalition formed by B's would be based on the distribution norm of equality. That is, the pay-off which would accrue because of the stronger bargaining position of the coalition would be split evenly between all B's.

The formation of such a coalition, however, is problematic and, therefore, unstable. The problem for individual B's is that A, faced with an opposing coalition of B's, is in a position to offer any particular B a larger pay-off than s/he would receive if s/he cooperated with other B's in the coalition. Thus, if B's are to maximize individual payoffs, we would anticipate that they should seek to form a coalition with A. But, such a coalition would be of benefit to B *only* if other B's continue to cooperate with each other and adhere to the norm of equality in their negotiations with A. If, on the other hand, all or most B's compete with each other to form an agreement with A, the situation reverts to the original monopolistic condition and B's would again lose bargaining power. Under such conditions, B's should seek to form a coalition with other B's. Thus, at this point, our theory is indeterminate. The problem is how can B's form a relatively stable coalition?

B's are in a dilemma analogous to the choices faced by players in the Prisoners' Dilemma Game. The long-run solution to this dilemma is cooperation among B's with acceptance of the lower risk but less remunerative norm of equality. However, because the temptation not to cooperate is high, the threat to the collective good is also high. This condition should generate distrust and suspiciousness among B's. One way to deal with such distrust is to increase the cost of members defecting from the coalition by making norms of cooperation stronger. Bonacich (1970; 1972; 1976) reports that norms stressing

cooperation, solidarity, and group cohesion, become more intense when the opportunities for individuals to maximize individual benefits at the cost of collective good are perceived as higher. Thus we would predict that given actor's perceptions of the two-class situation described above, a coalition of weak members is most likely to form if opportunities exist for interaction between weak members. We also would expect that such coalitions would advocate norms of equality. Conversely, given actor's perception of the two-class structure, norms of proportionality are more likely to occur if: (a) weak members in the structure do not have opportunities to communicate with each other; (b) weak members do not form norms of group solidarity or emphasize group cohesiveness; and (c) weak members believe they have a chance to form a coalition with strong members without incurring sanctions from other weak members.

Jerdee and Rosen (1974) present experimental evidence which reports that subjects were more likely to make "socially responsible" bids in a simulated business negotiation when they had the opportunity to communicate with each other. Bendix (1976), using an historical level of analysis, also provides support for this point. He suggests that European states in the eighteenth and nineteenth centuries prevented the lower classes from congregating because that would enable lower class people to advocate their own interests, a precondition for citizenship.

The two-class system we have depicted may be viewed as analogous to early stages of modernization or industrialization. Students of social development from Durkheim to the present tend to agree that with increasing industrialization, social structures become progressively more diverse. (See Marsh's [1967] review of the relevant literature.) We need not take the space to develop the relationship between structural diversity and an increasingly complex division of labor since most sociologists are familiar with the argument and the data. (See, for example, Durkheim [1949]; Horowitz [1966:431-53]; Smelser [1966].) Our special concern here is with

the effect of such diversity on norms of distributive justice.

Let us, for simplicity's sake, introduce a third class, C's, which offers a unique set of goods and services to members of the social structure. We assume that C's have accumulated sufficient resources to have bargaining power somewhere between A's and B's. With the introduction of this third class the coalition between B's is weakened because the structure is also dependent on C's, thereby requiring that all negotiations and coalitions include not only A's and B's but also C's. Since three levels of bargaining strength are represented, the norm of equality which derives from coalitions among members in the weakest bargaining position is less likely to predominate. Both A's and C's should seek payoffs proportionate with their greater resources. We would predict, therefore, that the greater the complexity in the division of labor within a social structure, the more likely the prevailing norms of distributive justice for relevant exchange domains will be based on the principle of proportionality. Further, given the proposed relationship between norms of equality and norms of solidarity, we predict that the greater the complexity of the division of labor within a social structure, the less likely the norms of group or class solidarity or cohesion will be stressed.

APPLICATION OF THE THEORY TO MEXICO AND THE UNITED STATES

Of the various macroindicators of social change and development reported in the literature, the three most prevalent, and, in our view, most germane, are income distribution, rates of industrialization, and patterns of social relationships. At the microlevel, these indicators involve decisions in two primary exchange domains. One pertains to material rewards such as money, jobs, investments, etc. The other domain relates to rewards associated with interpersonal relationships, such as affection, feelings of closeness, respect, and so forth.

A central question affecting the course of social change is the relative emphasis members of different societies place on

achieving rewards in each of these domains. Although we can reasonably assume that most people would like to maximize rewards in both domains, sociologists from Tönnies to Parsons have argued that maximizing one tends to be at the cost of the other (see also Lee, 1977:257-96 for relevant empirical evidence). We would hypothesize, therefore, that persons living in social structures characterized by a scarcity of material goods will place a greater value on material well-being than on interpersonal relations; conversely, social structures characterized by material abundance will place a higher value on interpersonal relations. We also predict that if structures differ in the abundance of material goods, the differences in the valuation of such goods will be greater between structures than within structures. Thus, differences in values placed on consummatory goods should be less pronounced between classes within a society than between societies, if those societies represent different levels of development. Finally, we predict that the people living in developing or modernizing structures will spend more of their resources to obtain material goods, whereas those residing in industrialized structures will make greater expenditures in obtaining interpersonal rewards.

Regarding norms of distributive justice, we predict that persons in highly developed social structures are more likely to advocate the norms of proportionality in the distribution of goods within a social structure, whereas members of social structures with less complex divisions of labor are more likely to advocate norms of equality. Moreover, the norms of group solidarity and norms of equality should be more evident among persons residing in social structures which are perceived by their members as containing relatively few social classes.

If these predictions hold, we can conclude that with societal development, norms of distributive justice change from an emphasis on equality to one of proportionality and from an emphasis on group solidarity and collective well-being to a more competitive and automatized orientation. Such conclusions are in accord with

descriptions of Töennies, Nisbet, and others. What we are suggesting is that these norms can be derived from the assumption that responses to structural conditions are motivated by self-interest.

The data we shall use in testing the utility of this theory were gathered in a cross-national study conducted in Mexico and the United States. The primary focus of the research was on the relationship between social structure, family socialization practices, and children's problem solving. Although the underlying model used in the study derived from exchange theory, many of the specific elements of the theory presented here were developed after the data were gathered. The findings, therefore, do not represent exact tests of hypotheses. On the other hand, they do not represent postdatum interpretations. We have not altered our original hypotheses since the data were collected; we have, however, refined our explanations (see Tallman, 1972).

When we gathered our data, Mexico was described as one of the two or three most rapidly developing countries in the world (AID, 1973). Nevertheless, its per capita income, the large discrepancy in income among its population, and its level of industrialization and productivity placed it among the modernizing as opposed to the industrialized countries of the world. The United States, on the other hand, especially in 1972 when the data were collected, was considered one of the most affluent nations in human history. Although the rate of increase in productivity was not as great as among other countries, it, nonetheless, epitomized a supreme industrial state.

The samples drawn for this study came from four peasant villages in the state of Michoacan, Mexico, Zacapu, an industrial town in the same state, and the Twin Cities in the state of Minnesota in the United States. Although the state of Michoacan is not among the most prosperous or highly developed in Mexico, the town of Zacapu had had considerable economic and demographic growth. In a 30-year period it had changed from a traditional market town of about 6,000 to an industrial urban center of 35,000. In many ways, Zacapu was more typical of Mexi-

can development than the large metropolitan centers. The Twin Cities represented a reasonably typical affluent United States metropolitan area. In sum, we compared residents of communities which, though characterized by economic scarcity, were undergoing rapid economic development, with residents of an affluent community which was experiencing a limited rate of growth.

The area in Mexico from which we drew our sample has been the subject of numerous ethnographic and descriptive studies (Foster, 1948; 1967; Beals, 1946; Nelson, 1971; Friedrich, 1970; and Pi-Sunyer, 1973). Although the two-class system we depicted is a simplification of the village social structure, we believe it closely approximates the structure of the villages we studied. Ethnographers usually report three graduation levels within what we would consider a poor class; despite these gradations the primary occupational roles are poor farmers and landless laborers, both of whom are dependent upon those who control larger fiscal resources, usually wealthy merchants, factory employers, or governmental officials all operating outside the confines of the particular villages (see, for example, Nelson, 1971:27-32, 46-53; and Pi-Sunyer, 1973:100). The villagers represented a lagging part of the changing Mexican economy; their lives had changed less than other socioeconomic groups in Mexico (Pi-Sunyer, 1973:99-100). Nevertheless, they were part of a money rather than subsistence economy, and like villagers elsewhere in Mexico, they were aware of changing opportunities, especially for their children (Miller, 1973:127; Diaz and Potter, 1967).

There is evidence, however, that peasants perceive of themselves as a single class in their struggle to attain material goods. The peasants in Michoacan have been characterized, as have peasants elsewhere, as being highly distrustful and suspicious of one another (Foster, 1967; Rogers, 1969). At the same time, a number of observers have noted the "leveling norm" which permeates peasant existence. Foster (1967:123-5) relates this to an "image of limited good" which assumes that all valued goods exist in such limited

quantities that "... an individual or family can improve its position only at the expense of others." Nash (1967:538) claims of peasant village life that "no one can run the risk of wide economic differentials."

These two phenomena, suspiciousness and an emphasis on the leveling norm (i.e., equality), are, as noted earlier, predictable from the two-class structure described above. We, therefore, would expect that peasants, in addition to advocating the norms of equality, would also advocate norms of solidarity. That is, it is precisely because of vulnerability and suspiciousness that the norm of solidarity is enforced.

Nash, among others, has argued that the leveling norm inhibits individual incentive and retards the peasants' potential for risk-taking and innovation. Interestingly, virtually the same conclusions are made by those who interpret the peasant life as family oriented. Rogers (1969) claims that peasant life is primarily familistic and only secondarily individualistic. Rewards reaped through individual effort must be shared by the other members of the family, so it is familistic orientations which explain the peasant's relatively low level of aspiration. It would appear that these chroniclers of peasant life believe that only a normative system which stresses the individual as the proper beneficiary for rewards can produce people willing to take advantage of opportunities for economic advancement. Such a conclusion not only runs contrary to our predictions, but, from the perspective of our theory, poses the problem in the wrong terms. Given our assumptions, the key issue becomes not whether the individual is viewed as a proper beneficiary of rewards, but what rewards the individual values most highly and would be willing to sacrifice to attain. Based on the prevailing conditions in Mexico we predicted that Michoacanos would put material advancement above interpersonal considerations including loyalty to family; we predicted the inverse relationship for the Twin Cities sample. The reported commitment peasants make to familism can be interpreted as a recognition of their economic interdependence with kin rather

than a concern for interpersonal satisfactions (see Miller, 1973:136-7, 139; Firth, 1969; Lomnitz, 1977). If this is true, then peasants should be ready to abrogate family commitments if they no longer are economically advantageous. The study we shall discuss below provides a test of this contingency.

Research on the values of Mexican city dwellers is sparse and it is difficult to discern general themes. Miller (1973) and Pi-Sunyer (1973) both emphasize that although the social structures of towns and cities contain a middle class and some upper-class elements, the vast majority are poor people of peasant origin. Pi-Sunyer (1973:33-4) concluded in his description of the Michoacan town of Zamora that "the povres of Zamora . . . have much more in common with the campesinos (peasants) of the little Mastizo ranchos (hamlets) than with the bourgeoisie of the town." Research evidence pertaining to white-collar persons is even more sparse. What little evidence there is, however, suggests that these groups are highly motivated to attain both social and material advancement (Miller, 1973:126-7).

With regard to the United States, in 1972 there was some research to support the hypothesis that there is a shift away from material attainment toward interpersonal well-being and concerns. Studies by Litwak (1959) and Sussman and Burchinal (1962) have shown a considerable emphasis on families' "helping" behavior and a disavowal of the notion that young people are on their own once they leave the "nest." Bell (1958), Mowrer (1958), and Riesman (1957) have all documented a tendency on the part of middle-class whites to move to the suburbs primarily to provide better living conditions for their families and to avoid the "rat race." Sennett (1970) argued that growing familism in the United States was at the cost of both individualism and a commitment to community.

The growth of suburbia, combined with increased affluence and a high emphasis on consumption, had contributed to an increasing tendency to disavow both material attainment and the commitment to upward mobility (Flacks, 1971). Gottlieb

(1973) reported an inclination among college students to emphasize job satisfaction over job status. Increasing attention was given to the notion that postindustrial America, especially the middle class, was relinquishing its commitment to work and upward social mobility. Berger and Berger (1971), for example, suggested that because of this new orientation, more high-level positions would be filled by children from blue-collar families than was true of earlier generations.

Despite the popularity of this view of a new America, it tended to be supported by arguments and description rather than data. When data were presented, they were drawn primarily from political activist groups which were not necessarily representative of the larger society. The question of whether a fundamental non-materialistic shift had occurred remained open.

Hypotheses

The following hypotheses derived from our theoretical perspective pertain specifically to the samples we studied.

Hypothesis 1. The Michoacan samples will place higher values on life goals stressing material attainment than on life goals stressing interpersonal commitments such as familism; whereas, the Minneapolis samples will evidence higher values on life goals involving interpersonal satisfactions such as familism, than on material attainment.

Hypothesis 2. The Michoacan sample will indicate a greater expenditure of personal resources (time, money, energy) in attaining material goals; whereas, the Twin Cities samples will spend greater resources in attaining interpersonal rewards.

Hypothesis 3. Differences in values on material advancement and interpersonal relationships should be less pronounced between social classes within a society than between societies.

Our predictions pertaining to norms of distributive justice are based on the inference that the social structure of peasants and workers in Mexico fosters their perception of social structure as made up of two social classes; whereas the complex-

ity of the United States social structure fosters the perception of multiple social classes.

Hypothesis 4. Michoacan peasants will be the most likely group to advocate norms of equality in distributing material goods followed in descending order by Michoacan blue-collar workers, Michoacan white-collar workers, Twin Cities blue-collar workers, and Twin Cities white-collar workers.

Hypothesis 5. Adherence to the norms of proportionality in distributing material goods will follow the reverse order from that predicted in Hypothesis 4.

Hypothesis 6. The peasant and Mexican blue-collar samples will place a greater value on community solidarity than on individual or family well-being; whereas, the blue- and white-collar United States samples will place a greater value on family well-being. The Mexican white-collar sample should fall in between these groups.

METHOD

The research reported here is part of a larger comparative study on socialization for social change. For this study, independent interviews were conducted with mothers and fathers of 12 to 15-year-old boys and girls in four rural villages and the city of Zacapu in the state of Michoacan, Mexico, and in Minneapolis/St. Paul, Minnesota. A proportion of the interview sample was then selected to participate in a game simulation in which families consisting of a mother and father and a 12 to 15-year-old son or daughter planned the career of the child. The game-simulation was conducted in two phases, one in which the family played the game as a unit and one in which the child played the game alone, under conditions of simulated social change.

The Zacapu blue- and white-collar samples were randomly drawn from school lists of children in the appropriate age brackets. As such they did not reflect the poorest or marginal segment of the population which may have withdrawn their children from school prior to the age of 12 (Lomnitz, 1977). The village samples represented virtually the entire population of

Table 1. Mean Scores for Child's Income Earned, Job Rank Obtained and Total Time and Money Invested in Specific Life-Style Choices during Participation in Game Simulation by Class and Community

	Michoacan			Twin Cities		F	p*
	Villages N = 50	Blue-Collar N = 42	White-Collar N = 42	Blue-Collar N = 47	White-Collar N = 57		
Income Earned	455.6	481.9	434.4	280.8	281.1	33.2	<.001
**Job Rank	1.6	1.35	1.39	2.12	1.83	18.0	<.001
Store Purchases	160.7	186.7	173.5	83.8	82.6	52.1	<.001
Visit Friends	17.6	17.3	21.0	32.1	25.6	11.4	<.001
***Visit Relatives	24.9	20.6	11.9	27.8	17.1	3.6	<.02
Age of Marriage	24.7	24.2	24.0	22.6	22.1	22.9	<.001
Number of Children	.77	.73	.80	1.0	1.7	13.0	<.001
% Married	44	80	85	83	93	$\chi^2=41.3$	<.001

* p and F ratio reported for main effects by community (i.e., villages, Michoacan blue- and white-collar, Twin Cities).

** Low score indicates high rank.

*** F ratio by class=11.7; p <.001.

children in the appropriate age brackets. Because of the greater cultural and ethnic homogeneity of Mexico as compared with the United States, the Twin Cities sample was drawn largely but not entirely from Lutheran and Catholic families selected from church membership lists. The churches were selected by using census data to maximize representativeness within each of the religious groups. A smaller subset of the sample was drawn from neighborhood listings in blue- and white-collar suburbs surrounding Minneapolis. The total number of families sampled was 112 in the villages, 160 in Zacapu, and 149 in the Twin Cities. Of this group, 50 village families and 82 families from both Zacapu and Minneapolis/St. Paul were selected to participate in the game simulation.⁵

The interview schedule was first written in English and translated into Spanish. It then was pretested in both countries. Back translations were made for only those items which proved troublesome for the Mexican and United States collaborators. The original schedule was developed in close collaboration with our Mexican colleagues at the Instituto Mexicano de Estudios Sociales. The Mexican interviews and the original coding of responses were done by native speakers.

The game simulation, to which we attached the acronym SIMCAR (Simulating

Career Choice Patterns), was constructed in keeping with an economic-consumption model. The way to do well in the game was to choose alternatives which emphasized attaining high-status jobs and financial return. This required deferred gratification and advanced planning. In the game participants made decisions concerning the investment of time and money in each of 17 choice areas beginning with the child at age 16 and ending at age 27. The game simulated occupational, educational, marital, religious, and consumption decisions typically made by and for youth in late adolescence and early adulthood (see Tallman et al., 1974; and Tallman and Wilson, 1974, for a detailed description of the game simulation).

RESULTS

Table 1 presents the findings relevant to the first three hypotheses. This Table summarizes both the final payoffs and the investments (time and money) made by the children in the various samples while playing SIMCAR.⁶ Since investments for

⁶ The data from the family game are not appropriate for this analysis because families played the game under different treatment conditions which affected the family performance. The purposes of these manipulations were to test hypotheses pertaining to family experiences of success and failure on children's performance. These manipulations do not systematically affect the results reported in Table 1, however, since families were randomly assigned to treatment cells within the categories of class and community and the treatments were counterbalanced.

⁵ The final N's for families participating in the simulation game differed because of errors in cell assignments and errors during the game which required additional sampling.

certain rewards in the game required forsaking other rewards, the payoffs reflected in Table 1 indicate the actors' preferential ordering of the choices available. Hypothesis 1 predicted that Michoacanos would adhere to values which enhanced material attainment and Twin Cityites would adhere to values which emphasized better interpersonal relationships. An overview of Table 1 indicates that the data support the hypothesis. The data also support Hypothesis 2. The Michoacan children were significantly more likely to obtain higher job ranks, earn more money during the game, and spend more money in the store. Conversely, the Twin Cities children invested significantly more time and money in friends and dates, were significantly more likely to get married, and chose to have more children. Finally in support of Hypothesis 3, the differences were greater between societies than within societies. Controls for parent's income, education, religion, and family size applied within societies studied did not seriously attenuate the findings.

Only the findings pertaining to relatives were not in accord with the hypotheses. Here class differences as well as differences among the three communities were evident. The village children and blue-collar children in both Michoacan and the Twin Cities were significantly more likely to visit relatives than white-collar children in either society.

These data suggest that the Michoacan children in our study not only were more likely than Twin Cities children to seek material gain, but also were aware of and willing to commit themselves to life styles which would maximize these gains. Attaining the highest job ranks, for example, required commitments to education and job experience in the early rounds of the game. Obtaining sufficient income to make store purchases required delaying having children and saving money. The Twin Cities children in our sample demonstrated a greater commitment to maximizing social and family relationships, even at the cost of obtaining higher job ranks and greater income.

Hypothesis 4 predicted that the norms of equality in exchanges pertaining to

material goods would be most highly emphasized by Michoacan peasants followed by Michoacan blue-collar workers, Michoacan white-collar, Twin Cities blue-collar, and, finally, Twin Cities white-collar workers. The reverse order is hypothesized for advocacy of the norms of proportionality (Hypothesis 5). Our data did not allow us a direct test of these hypotheses. Respondents were not provided an opportunity to decide how to divide or distribute a reward. We did have questions in the interview, however, pertaining to whether respondents would want to equalize an unequal situation or whether they believed that people or groups with greater resources should be more highly rewarded. The former type of response represents an equality norm and the latter type of response we interpret as representing a proportionality norm. To test the hypotheses we used three items from an index developed to assess concepts of distributive justice. The items posed alternative statuses and/or investments affecting particular situations and asked respondents to choose which of the alternatives should be rewarded. One of the questions posed alternatives which required either equality or proportionality answers. The question was as follows:

Two rural communities apply for government funds to improve farm production. One community has shown it can do very well on limited resources and has a higher level of productivity than the other community, which is extremely poor. Which community should get the funds?

Choosing the poorer community was coded as an equality response and choosing the productive community was coded as a proportionality response. The second item posed the norm of equality against assisting kin. It stated:

Imagine you own a farm and you want to hire one person to help you. Two people who are equally good workers apply. One is a relative who is not very poor. The other is a stranger who is very poor. To whom would you give the job?

Those who stated "stranger" were coded as making an equality response. The third item pitted age and/or need against proportionality. It posed the following situation:

An uncle wants one of two sons in a family to go to work for him. It is a job which pays well and both boys want to go. The younger boy has had experience in this kind of work. The older boy has no experience and has not shown an interest in this type of work before, but needs the money badly. Who should go?

Those who respond in favor of the younger child were coded as giving a proportionality response.

The findings presented in Table 2 generally support Hypotheses 4 and 5, although the findings are stronger for the male respondents than for female. The villagers and Michoacan blue-collar workers were more likely to advocate norms of equality and least likely to advocate proportional norms. The Michoacan white-collar respondents were lowest on equality and highest on proportionality.

The data with regard to blue- and white-collar Twin City males and females are less clear-cut. Although both groups are more likely to advocate proportional norms as predicted, the blue-collar males were also significantly more likely than white-collar males to advocate equality on the second item ($\chi^2 = 9.72, p < .01$). In fact, on this item the Twin Cities blue-collar males ranked second only to the villagers in percent choosing the equality item. This was also the only item in which no significant differences occurred among the women sampled. Any interpretation of this anomaly in our findings would be entirely speculative.

Data pertaining to the final hypothesis is presented in Table 3. Hypothesis 6 predicted the same ordering for advocating the norm of collective solidarity as Hypothesis 4 predicted for the norm of equality. To test this hypothesis, we used four questions from the interview schedule. Each question was in the form of three statements asking whether the community, the individual, or the family should be the recipient of a given benefit. Each of the questions focused on a different reward. The first question, for example, was concerned with social control and asked whether it was preferable to have a safe community, to teach children to behave, or to control oneself. The second question referred to interpersonal relations and

stressed getting along with neighbors, family, or feeling good about oneself. The third group of statements referred to who should be the proper beneficiary of earned income. Unfortunately, in this set the self and family choices were confounded. In an effort to distinguish between nuclear and extended family, the self statement read, "Making a lot of money for myself and my family," whereas the family statement read, "Making sure my parents are well cared for." The final set of statements pertain to the proper recipient of happiness.

It can be seen from the bottom three rows in Table 3 that, when all four items are summed, Michoacanos tended to stress community welfare significantly more frequently than Twin Cityites. Conversely, Twin Cityites were significantly more likely to emphasize family well-being. This latter finding probably would have been even more pronounced if it were not for the confounding of the question referring to money. As predicted in Hypothesis 6, the villagers in Michoacan placed the greatest emphasis on community and the white-collar urbanites placed the least emphasis on this category. Again, these differences were more pronounced for men than for women. A similar differential did not occur between white- and blue-collar men in the Twin Cities. One possible explanation for the lack of differentiation in the United States as compared with Mexico is the larger discrepancy in income and life styles between each of the social classes in Mexico.

An examination of the separate questions reveals that the emphasis on community is most pronounced on the income question for villagers and on the interpersonal relations question for Michoacan urbanites. The happiness questions provide indirect support for the proposition that the norm emphasizing community benefits is designed to maximize individual rewards. It can be seen that this is the only item in which the vast majority of Michoacanos stressed personal gain, whereas around 90% of the Twin Cityites emphasized family happiness. One interpretation of this finding is that the Mexican emphasis on community in the other

Table 2. Respondents' Choice of Appropriate Beneficiary on Three Distributive Justice Items by Husbands and Wives, Class and Community* (Percentages)

Item	Michoacan						Twin Cities					
	Villages			Blue-Collar			White-Collar			Blue-Collar		
	Husbands	Wives	N	Husbands	Wives	N	Husbands	Wives	N	Husbands	Wives	N
Poor Community vs. Productive Community	N=108	N=111	N=85	N=91	N=74	N=76	N=71	N=71	N=77	N=78	N=78	N=78
Productive Community (Parity)	11	8	12	3	18	9	31	22	26	18	16.67	17.5
Poor Community (Equality)	89	92	88	97	82	91	69	77	74	82	.002	<.001
Hire Relative vs. Poor Stranger	N=107	N=112	N=85	N=91	N=74	N=76	N=71	N=71	N=77	N=78		
Relative Stranger (Equality)	18	28	29	21	30	22	28	24	42	27	12.6	1.7
Seniority vs. Productivity	N=107	N=111	N=85	N=87	N=74	N=78	N=71	N=70	N=77	N=77		
Seniority Productivity (Parity)	35	42	48	46	30	37	25	30	13	18	23.98	<.001
Productivity (Parity)	65	58	52	54	70	63	75	70	87	82	17.5	.001

* Husbands and wives were interviewed separately but at the same time. N's differ due to missing data.

Table 3. Respondents' Choice of Beneficiary for Four Specified Benefits (Percentages) by Husbands and Wives, Class and Community*

Benefit Social Control	Michoacan						Twin Cities						For Husbands χ^2	p	For Wives χ^2	p
	Villages		Blue-Collar		White-Collar		Blue-Collar		White-Collar		χ^2	p				
	Husbands N=109	Wives N=111	Husbands N=84	Wives N=90	Husbands N=74	Wives N=78	Husbands N=71	Wives N=73	Husbands N=78	Wives N=78						
Self	10.1	2.7	10.7	6.7	17.6	6.5	28.2	33.8	39.7	50.0	49.71	<.001	101.73	<.001		
Family	57.8	85.6	61.9	75.6	66.2	77.9	63.4	59.2	52.6	44.9						
Community	32.1	11.7	27.4	17.8	16.2	15.6	8.5	7.0	7.7	5.1						
Interpersonal Well-being																
Self	23.4	22.5	16.3	15.7	13.7	7.7	15.5	50.7	25.6	48.7	233.96	<.001	205.73	<.001		
Family	5.6	6.3	8.8	15.7	13.7	17.9	78.9	49.3	74.4	51.3						
Community	71.0	71.2	75.0	68.5	72.6	74.4	5.6	0	0	0						
Money																
Self	5.6	6.3	2.4	4.4	1.4	5.3	60.0	43.7	50.6	29.9	169.51	<.001	125.40	<.001		
Family	16.8	72.3	27.4	26.7	38.4	31.6	21.4	45.1	23.4	46.8						
Community	77.6	71.4	70.2	68.9	60.3	63.2	18.6	11.3	26.0	23.4						
Happiness																
Self	78.7	81.3	75.0	84.4	81.1	88.5	8.5	5.6	5.1	6.4	224.98	<.001	290.18	<.001		
Family	14.8	8.0	19.0	10.0	9.5	8.4	87.3	90.1	91.0	91.0						
Community	6.5	10.7	6.0	5.6	9.5	5.1	4.2	4.2	3.8	2.6						
Mean Percentage																
Total for Four Items																
Self	29.2	28.2	26.3	28.2	25.2	27.0	28.6	33.4	29.9	33.6	224.98	<.001	290.18	<.001		
Family	23.6	30.6	28.8	32.0	32.9	40.6	62.9	60.9	61.0	58.5						
Community	47.2	41.2	45.0	40.2	40.0	39.6	8.6	5.6	9.1	7.8						

* Husbands and wives were interviewed separately but at the same time. N's differ due to missing data.

items can be viewed as fostering their individual well-being, whereas the North Americans consistently emphasize the importance of interpersonal contentment.

SUMMARY

The data presented with regard to norms of distributive justice are in accord with ethnographic reports describing Mexican peasants and, less frequently, blue-collar Mexican urbanites. The commitment to community welfare and the leveling norm has received wide circulation in the literature describing Mexican life. What we suggest here, however, is that contrary to common interpretations these norms do not impair their adherents from seeking material advancement. Rather, given the scarcity of material goods and broad differentials in the distribution of these goods, such norms can be viewed as rational commitments to attaining the best return possible under prevailing conditions.

The fact that such norms do not deter people from seeking material gain is evidenced by the data on performance in the game simulation. The greater income and higher job ranks obtained by participants could only come about by commitments of time and money to education, study and savings. The game simulation behaviors are not, of course, illustrative of how people actually live their lives but they are suggestive of how people would like to live if they had the opportunity.

Our data provide support for Apter's (1971) hypothesis that people in countries in advanced stages of modernization tend toward embourgeoisment. This is demonstrated by findings pertaining to job ranks and store purchases. A reasonable interpretation of these findings is that whereas the village children sought primarily to make as much money as they could, the Michoacan urban children sought high-status jobs and the opportunity to spend the money they earned on consumption items.

On the other hand, the data from the Twin Cities samples are in accord with perspectives describing the United States as a postindustrial society. The findings with regard to both distributive justice

norms and performance in the game simulation indicate major concern for fostering interpersonal relations and less concern for material equality or maximizing material gains.

Our data are limited in that the research is cross-sectional. We cannot, therefore, conclude that the differences we report are due mainly to differences in the level of development of the two countries. Nevertheless, the fact that the Michoacan children performed in a manner which almost caricatures the "Protestant ethic" descriptions of an industrializing America, whereas Twin Cities children seemed to be eschewing materialistic values, provides at least indirect support for the thesis that these behaviors are associated with postindustrial and modernizing levels of development.

CONCLUSION

We believe the critics of the exchange perspective have pointed correctly to the failure of the perspective to contribute adequate explanations of how collectivities develop and change mechanisms of social control. These critics, however, do not provide an adequate alternative explanation or pinpoint essential flaws in the exchange argument. For those committed to the Durkheimian tradition, developing linkages between individual and collective behaviors are by definition inappropriate and unnecessary. "... Social institutions, norms, and values grow out of the moral mandates of society" (Ekeh, 1974:185). Therefore, "... social exchange is a supraindividual process and individual self-interests may be involved in it, but they cannot sustain social exchange processes" (Ekeh, 1974:43). To accept this perspective is to eliminate the potential for analyzing the decision and behavioral processes through which people agree or disagree, adhere or reject, conform or deviate from a variety of mechanisms of social control. It is true that individuals involved in these processes operate under social constraints, but to ignore their contribution to the formation of norms and other methods of social control is to obfuscate the mechanisms

through which commitments to the collectivity are established and altered.

There is another body of criticism of the exchange perspective which, though it seriously considers the impact of individuals on collective action, argues that rational self-interest and collective well-being are antithetical. This approach, exemplified by the work of Buckley et al. (1974) makes an important distinction between individual decision making and collective decision making, and suggests that the exchange framework does not contribute to our understanding of the latter. Buckley et al. point out, correctly we believe, that individuals' behaviors are constrained by a number of social contextual factors, including access to material or social resources and the inability to control the actions of others. Thus, actors must consider their own resources compared with others' resources and their own preferences compared with others. They conclude:

Both game theory and the economic model of exchange and its derivative in sociology, exchange theory, ignore the possibility that human beings may be unable to or, in many instances, unwilling to calculate immediate rewards and costs in social transactions. . . . [S]uch theories fail to consider that exchanges may be initiated in order to establish or maintain a relationship, e.g., bonds of trust or friendship or superordination over others. . . . (Buckley et al., 1974:294)

In brief, Buckley and his colleagues provide four basic premises related to collective decision making:

1. Individual decisions are embedded in a social context.
2. Individuals must take into account mutual contingencies in which their own resources are considered in relation to the resources of others and their own preferences considered against the preferences of others.
3. Social actors must consider the transactions between people in terms of long-range as well as immediate payoffs.
4. Individuals value exchange domains other than those involving goods and services.

We consider these premises to be essential for an adequate explanation of collective decision making. They do not, how-

ever, necessarily contraindicate principles integral to the exchange perspective. In the theory and data presented in this paper, we have attempted to show how the above premises can be integrated with exchange principles (including the individualistic and utilitarian assumptions), to explain the formation of specific social norms and values.

Our theory is limited to specific values and norms of distributive justice. It is related to evolutionary—not revolutionary—social change. It pertains specifically to differences between modernizing and industrialized states rather than to the entire range of social development. Yet there are implications for a broader theory of development. It seems reasonable to consider that perception of society as a two-class structure is most conducive to mass revolution primarily because it is associated with intraclass solidarity and norms of equality. This may be one reason why Marx, despite a sophisticated sensitivity to conflicting interest groups in nineteenth century Europe, insisted that at the core, capitalism is a two-class social system. And Lenin, in his prerevolutionary writings, advocated policies which would reinforce the concept of two opposing classes in Russia, even at the cost of resolving current social ills.

At the very least the theory and the data we have reported raise serious questions as to the claim that traditional beliefs and norms tend to impede the course of economic development. A more reasonable interpretation is that people's choices are generally rational and amenable to change, given available information and opportunities. From this perspective three critical types of data seem necessary to explain the course of social development: 1. the degree of scarcity and distribution of material goods; 2. the type and nature of relevant information available for people to process; 3. objective estimates of the choices available in the social structure.

If the theory has merit, those with applied interests in institution building and fostering development well may focus less attention on creating opinion or normative change and more attention on the proper

dissemination of information in forms which can be processed and implemented. From the perspective of individual adaptations of innovations the problem is not that such innovations run contrary to culturally determined norms, but that they may not be perceived as instrumental in achieving desired goals.

From the perspective of a theory of social change, our theory suggests that norms and values change with the marginal utility of available goods and as comparison levels and available alternatives change within the social structure. Such structural changes occur as people with differing resources make decisions designed to maximize rewards and minimize costs in regard to salient domains.

REFERENCES

- Agency for International Development (AID)
1973 Gross National Product, Growth Rates and Trend Data by Region. Bureau for Program and Management Services, Statistics and Report Division.
- Alford, Robert E.
1963 *Party and Society: The Anglo-American Democracies*. Chicago: Rand McNally.
- Apter, David E.
1971 *Choice and the Politics of Allocation*. New Haven: Yale University Press.
- Bartos, Otomar I.
1972 "Foundations for a rational-empirical model of negotiation." Pp. 3-20 in J. Berger, M. Zelditch, Jr., and B. Anderson (ed.), *Sociological Theories in Progress*, Vol. 2. Boston: Houghton Mifflin.
- Beals, Ralph L.
1964 *Cherán: A Sierra Tarascan Village*. Washington, D.C.: U. S. Government Printing Office.
- Bell, Wendell
1958 "Social choice, life styles, and suburban residence." Pp. 225-47 in William M. Dobriner (ed.), *The Suburban Community*. New York: Putnam.
- Bendix, Reinhard
1976 "The extension of citizenship to the lower classes." Pp. 78-101 in R. Braungart (ed.), *Society and Politics*. Englewood Cliffs: Prentice-Hall.
- Berger, Joseph, Morris Zelditch, Jr., B. Anderson and Bernard P. Cohen
1972 "Structural aspects of distributive justice." Pp. 119-46 in J. Berger, M. Zelditch, Jr. and B. Anderson (eds.), *Sociological Theories in Progress*, Vol. 2. Boston: Houghton Mifflin.
- Berger, Peter L. and Brigitte Berger
1971 "The blueing of America." *The New Republic* 164 (April 3):20-3.
- Blau, Peter M.
1964 *Exchange and Power in Social Life*. New York: Wiley.
- Blauner, Robert
1964 *Alienation and Freedom: The Factory Worker and His Industry*. Chicago: University of Chicago Press.
- Bonacich, Phillip
1970 "Putting the dilemma back into prisoners' dilemma." *Journal of Conflict Resolution* 14:379-87.
1972 "Norms and cohesion as adaptive responses to potential conflict: an experimental study." *Sociometry* 35:357-75.
1976 "Secrecy and solidarity." *Sociometry* 39:200-8.
- Buckley, W., T. Burns and L. D. Meeker
1974 "Structural resolutions of collective action problems." *Behavioral Science* 19:277-96.
- Camilleri, Santo F., Peter Berger, and Thomas L. Connor
1972 "A formal theory of decision making." Pp. 21-37 in J. Berger, M. Zelditch, Jr. and B. Anderson (eds.), *Sociological Theories in Progress*, Vol. 2. Boston: Houghton Mifflin.
- Cook, Karen S.
1975 "Expectations, evaluations and equity." *American Sociological Review* 40:372-88.
- Cook, Karen S., and Richard M. Emerson
1978 "Power, equity, commitment in exchange relations." *American Sociological Review* 43:721-39.
- Diaz, May N., and Jack M. Potter
1967 "The social life of peasants." Pp. 154-67 in J. Potter, M. Diaz and G. Foster (eds.), *Peasant Society*. Boston: Little, Brown.
- Durkheim, Emile
1949 *The Division of Labor in Society*. Trans. by George Simpson. Glencoe: Free Press.
- Ekeh, Peter P.
1974 *Social Exchange Theory*. Cambridge, Ma.: Harvard University Press.
- Emerson, Richard M.
1972 "Exchange theory, pts. 1 and 2." Pp. 38-87 in J. Berger, M. Zelditch, Jr., and B. Anderson (eds.), *Sociological Theories in Progress*. Boston: Houghton Mifflin.
1976 "Social exchange theory." Pp. 335-62 in A. Inkeles (ed.), *Annual Review of Sociology*. Palo Alto: Annual Reviews.
- Firth, Raymond
1969 "Social structure and peasant economy." Pp. 23-37 in C. Wharton (ed.), *Subsistence Agriculture and Economic Development*. Chicago: Aldine.
- Foster, George
1948 *Empire's Children: The People of Tzintzuntzan*. Washington, D.C.: Smithsonian Institution.
1967 *Tzintzuntzan: Mexican Peasants in a Changing World*. Boston: Little, Brown.
- Flacks, Richard
1971 *Youth and Social Change*. Chicago: Markham.

- Friedrich, Paul
1970 *Agrarian Revolt in a Mexican Village*. Englewood Cliffs: Prentice-Hall.
- Gergen, Kenneth
1969 *The Psychology of Behavior Exchange*. Reading: Addison-Wesley.
- Gergen, K. J., and M. G. Taylor
1969 "Social expectancy and self-presentation in a status." *Journal of Experimental Social Psychology* 5:79-92.
- Goffman, Erving
1963 *Stigma*. Englewood Cliffs: Prentice-Hall.
1970 *Strategic Interaction*. Philadelphia: University of Pennsylvania Press.
- Gottlieb, David
1973 "Work and families: great expectations for college students." Paper presented at annual meeting of the American Sociological Association, New York.
- Heath, Anthony
1976 *Rational Choice and Social Exchange*. Cambridge, Ma.: Cambridge University Press.
- Homans, George
1961 *Social Behavior: Its Elementary Forms*. New York: Harcourt Brace Jovanovich.
- Horowitz, Irving L.
1966 *Three Worlds of Development: The Theory and Practice of International Stratification*. New York: Oxford University Press.
- Inkeles, Alex
1966 "The modernization of man." Pp. 138-50 in M. Weiner (ed.), *Modernization, The Dynamics of Growth*. New York: Basic Books.
- Jerdee, Thomas H. and Benson Rosen
1974 "Effects of opportunity to communicate and visibility of individual decision on behavior in the common interest." *Journal of Applied Psychology* 59:712-6.
- Jones, E., K. J. Gergen, P. Gampert and J. W. Thibaut
1965 "Some conditions affecting the use of ingratiation to influence performance evolution." *Journal of Personality and Social Psychology* 1:613-25.
- Kahl, Joseph A.
1968 *The Measurement of Modernization*. Austin: University of Texas Press.
- Komarita, S. S. and Jerome M. Chertkoff
1973 "A bargaining theory of coalition formation." *Psychological Review* 80:149-62.
- Kuhn, Alfred
1974 *The Logic of Social Systems*. San Francisco: Jossey-Bass.
- Lane, Robert E.
1959 "The fear of equality." *American Political Science Review* 53:35-51.
- Lee, Gary R.
1977 *Family Structure and Interaction*. Philadelphia: Lippincott.
- Lipset, Seymour M.
1963 "The value patterns of democracy: a case study in comparative analysis." *American Sociological Review* 28:515-31.
- Litwak, Eugene
1959 "The use of extended family groups in the achievement of social goals." *Social Problems* 7:177-87.
- Lomnitz, Larissa Alder
1977 *Networks and Marginality: Life in a Mexican Shantytown*. New York: Academic Press.
- Marsh, Robert M.
1967 *Comparative Sociology*. New York: Harcourt, Brace.
- Meeker, B. F.
1971 "Decisions and exchange." *American Sociological Review* 36:485-95.
- Miller, Frank C.
1973 *Old Villages and a New Town: Industrialization in Mexico*. Menlo Park: Cummings.
- Mowrer, Ernest R.
1958 "The family in suburbia." Pp. 147-63 in W. M. Dobriner (ed.), *The Suburban Community*. New York: Putnam.
- Nash, Manning
1967 "The social context of economic choice." Pp. 524-38 in G. Dalton (ed.), *Tribal and Peasant Economies*. New York: Natural History Press.
- Nelson, Cynthia
1971 *The Waiting Village: Social Change in Rural Mexico*. Boston: Little, Brown.
- Ofshe, Lynne and Richard Ofshe
1970a *Utility and Choice in Social Interaction*. Englewood Cliffs: Prentice-Hall.
- Ofshe, Richard, and Lynne Ofshe
1970b "Choice behavior in coalitions games." *Behavioral Science* 15:337-49.
- Patchen, Martin
1970 "Models of cooperation and conflict: a critical review." *Journal of Conflict Resolution* 16:389-407.
- Pi-Sunyer, Oriol
1973 *Zamora, Change and Continuity in a Mexican Town*. New York: Holt, Rinehart and Winston.
- Riesman, David
1957 "The suburban dislocation." Pp. 125-46 in *Annals of the American Academy of Political and Social Sciences* 314:123-46.
- Robinson, Robert V. and Wendell Bell
1978 "Equality, success, and social justice." *American Sociological Review* 43:125-43.
- Rogers, Everett M.
1969 "Motivations, values, and attitudes of subsistence farmers: toward a subculture of peasantry." Pp. 111-35 in E. Warton (ed.), *Subsistence Agriculture and Economic Development*. Chicago: Aldine.
- Rokeach, Milton
1973 *The Nature of Human Values*. New York: Free Press.
- Sennett, Richard
1970 *The Uses of Disorder: Personal Identity and City Life*. New York: Random House.
- Smelser, Neil J.
1966 "The modernization of social relations." Pp. 110-27 in M. Weiner (ed.), *Modernization: The Dynamics of Growth*. New York: Basic Books.

- Sussman, Marvin B. and Lee Burchinal
 1962 "Kin family network: unheralded structure in current conceptualizations of family functioning." *Marriage and Family Living* 24:231-40.
- Tallman, Irving
 1967 "The balance principle and normative discrepancy." *Human Relations* 20:341-55.
 1972 "Social structure and socialization for change." Paper presented at Theory Workshop of National Council of Family Relations, Portland.
- Tallman, Irving and Lance Wilson
 1974 "Simulating social structures: the use of a simulation game in cross-national research." *Simulation and Games* 5:147-67.
- Tallman, Irving, Lance Wilson and Murray Straus
 1974 "SIMCAR: a game simulation method for cross-national family research." *International Social Science Council, Social Science Information* 13:121-44.
- Thibaut, John and Harold Kelley
 1959 *Social Psychology of Groups*. New York: Wiley.
- Weinstein, Eugene A. and Paul Deutschberger
 1963 "Some dimensions of altercasting." *Sociometry* 26:454-66.

SEX AND AUTHORITY IN THE WORKPLACE: THE CAUSES OF SEXUAL INEQUALITY*

WENDY C. WOLF AND NEIL D. FLIGSTEIN

University of Arizona

American Sociological Review 1979, Vol. 44 (April):235-252

This paper contributes to our understanding of the causes of the restriction of women from positions of authority in the workplace. We ascertain the extent to which the sex gap in aspects of authority can be explained by the following three factors: (1) women's qualifications, (2) the behaviors and policies of employers, and (3) the attitudes and behaviors of women themselves. We find that while the amount of sex difference in aspects of authority that can be explained by women's qualifications is substantial, it is not the most important factor responsible for the restriction of women from positions of authority. Furthermore, strong evidence is presented that suggests that the behaviors and policies of employers are much more important causes of sexual differences in authority in the workplace than are the attitudes and behaviors of the women themselves.

An individual's power and social position flows predominantly from his/her position in an economic organization, be it large or small, public or private (Dahren-

dorf, 1957; Galbraith, 1969). The essential feature of power in organizations is the ability to control resources: capital, people's work, and things. Indeed, for most people, being "higher up" means precisely this: the ability to control one's work and the work process of others.

While men have obtained power through their positions in the work setting, women's power traditionally has derived from their roles in the family. It has been argued that women gained social position from the men in their lives, first from their fathers and then from their husbands (Parsons, 1942; 1955). This stems from the fact that until quite recently, women's traditional role obligations centered on marriage and childbearing, and their commitment to paid employment was viewed as secondary to their other role obligations (Myrdal and Klein, 1956; Parsons, 1942; 1955; Smuts, 1971). We argue that since,

* Direct all communications to: Wendy C. Wolf; Department of Sociology; University of Arizona; Tucson, AZ 85721.

We gratefully acknowledge the helpful comments of Bill Bielby, Dudley Duncan, Chuck Halaby, Mike Hout, Randy Hodson, Bill Sewell, Mette Sørensen, and the anonymous reviewers, as well as the computational assistance of Nancy Bode and Harold Varnis. Of course, any remaining faults are our own. We are grateful to Bill Sewell and Bob Hauser for making their data available to us. The authors and this research were supported by a grant to Bill Sewell and Bob Hauser entitled "Social and Psychological Factors in Status Attainment" from the National Institute of Mental Health (MH-06275-16), NRSA training grant HD07014, and a Center for Population Research grant (HD05876) to the Center for Demography and Ecology at the University of Wisconsin from the Center for Population Research of the National Institute of Child Health and Human Development.

in the past, women largely derived their social positions from their families, they were restricted from positions of power in the work setting. However, the traditional view of women's roles has begun to break down as more women are in paid employment and women are more likely to work throughout their lives. This results in women's employment becoming an integral part of the family's social position (Sampson and Rossi, 1975). Furthermore, more women are likely to head their own families (Ross and Sawhill, 1975) and rely on their own work activities to obtain power and money. In short, women's situations have changed, and many now rely on their own work activities as an important mechanism for obtaining power in society.

Despite these changes, women are much less likely to be in positions of power in the workplace than are men (Wolf and Fligstein, 1979; Grimm and Stern, 1974; U.S. Bureau of the Census, 1973). Furthermore, sexual differences in power in the work setting recently have been found to be an important factor generating inequality in earnings between men and women (Roos, 1978; Robinson and Kelly, 1977). If one is interested in remedying sexual inequality in the workplace, it is helpful to understand how these differences in power are generated. It is the purpose of this paper to contribute to the understanding of the allocation of men and women into positions of power in the work setting. We are concerned with legitimated power in the work setting: authority (Hall, 1972; Mechanic, 1962; Weber, 1947). We define authority as legitimated control over the work process of others.

What do we already know about sexual inequality in authority in the workplace? First, census data indicate that women are much less likely to be in the major occupation group, "managers and administrators, except farm," than are men.¹ Second, although women are highly rep-

resented in certain professional occupations (nurse, social worker, school teacher, librarian), men are overrepresented in the higher level positions within these professions (Grimm and Stern, 1974). Hence, even in the sectors of the labor force where women predominate, men tend to be in supervisory roles. In general, women tend to be excluded from occupations which by definition involve supervising others and they tend not to assume supervisory positions in work settings in which they dominate, let alone in mixed work groups. Recent research has shown that women are much less likely than men to be in positions of authority, even when they have the same level of education and occupational status, and that this difference cannot be explained by the fact that men are more likely to be self-employed (Wolf and Fligstein, 1979). In sum, there is evidence of marked sexual inequality in authority in the workplace.

No existing research suggests how these sex differences in authority in economic organizations are generated. We assess the relative importance of three sets of factors that partially account for the unequal distribution of men and women in positions of authority: (1) women's qualifications, (2) the behaviors and policies of employers, and (3) the attitudes and behaviors of the women themselves.

First, it is likely that women are restricted from positions of authority because they are less qualified on the following grounds: (1) their training, (2) their intermittent patterns of employment, (3) their lack of sufficient tenure and commitment to the firm, and (4) restrictions on their geographic mobility as well as travel for work purposes because of their family situations (Blau and Jusenius, 1976; Oppenheimer, 1970).

Second, the restriction of females from positions of authority may be due to the behaviors and policies of employers. Individual employers or persons with the power to hire and promote may restrict females from positions of authority because of their attitudes about women's ability to perform in supervisory positions. In this society, persistent sex-role

¹ Although most job titles that are in the major group, "managers and administrators, except farm," do involve control of others, a small number of titles do not. Some examples of this latter group are: railroad conductor, juror, bookmaker.

socialization has led to a well-defined division of labor within the family. This has had implications for the kinds of positions employers have thought were appropriate for women (Boulding, 1976; Bernard, 1976; Hartmann, 1976). Employers' views on women's ability to perform in positions of authority are shaped by employers' attitudes on what women's roles should be as well as the actual behavior of women. Many employers feel women are too emotional and are therefore unfit to be in supervisory positions (Kantor, 1977; Bowman et al., 1965). There is also a strong belief among employers and workers that women should not supervise male or mixed-work groups (Caplow, 1954; Kantor, 1977; Whyte, 1949; Oppenheimer, 1970; Bowman et al., 1965; National Manpower Council, 1957). In short, we argue: (1) that employers have strong feelings about the appropriateness and ability of women to assume supervisory positions, especially those positions involving supervision of mixed-sex or all-male work groups; and (2) that these attitudes affect the allocation of females into these positions. This is, in essence, a statistical discrimination argument (Phelps, 1972; Thurow, 1975) in that an individual female may be restricted from such a position regardless of her employment history because an individual employer believes that members of her sex, for whatever reason, are unsuited for assuming such roles.

Employers also restrict women from positions of authority because of rules and policies within the organization, but not necessarily specific to it. Segmented labor market theory suggests that women are placed in sectors where jobs have limited promotion possibilities (Doeringer and Piore, 1971; Gordon, 1972; Wolf and Rosenfeld, 1978). Because of these limited career progressions, women would be less likely to be in positions of authority than men. While labor market structures exist outside any given organization, they are reflected in the policies and practices of any organization. It is also possible that union/management contracts may inhibit women's movements into positions of authority. For example, contracts which specify "last hired/first fired" conditions

seem to have more impact on the career lines of women than men. In sum, we posit that employers' behaviors and policies have a marked impact on the sexual distribution of authority in the workplace.

Another reason for not expecting women to occupy positions of authority concerns some women's views of their own competence for such positions as well as their lack of desire to be in supervisory roles. Some women, not having been socialized into leadership roles, may see themselves as less capable of assuming such positions. Because women are more likely to anticipate interruptions in paid employment, they may be unwilling to make the long-term commitment to an employer that a position of authority often entails.

By empirically assessing the importance of these three factors for the explanation of the restriction of females from positions of authority, we will understand whether the major differences between men and women in authority are due to factors under the control of the individual or factors resulting from the behavior of others in the labor market. This is valuable as it suggests the direction that policy makers or people interested in achieving sexual equality in the workplace should direct their attention.

Analytic Strategy

In our empirical analyses, we will assess the importance of our various explanations of sex differences in authority in the workplace. This requires an approach that allows us to divide some measured difference into components that can be attributed to the various explanations we have suggested. To do this, we begin by estimating the following reduced-form equation separately for each sex:

$$A = f(\text{Ed}, \text{Exp}, \text{Ten}, \text{Cm}, \text{Chdn}), \quad (1)$$

where A is authority, Ed is education, Exp is work experience, Ten is tenure with current employer, Cm is currently married, and Chdn is whether the respondent had any children. Education, work experience, and tenure are tapping differ-

ent aspects of human capital. Marital status and the presence of children tap the restrictions on geographical mobility and travel for work purposes imposed on females by their family situations. The parameters in these equations indicate the differential effects by sex of an individual's qualifications on the acquisition of authority. Moreover, in estimating these parameters, we are able to determine the extent to which the gross sex difference in authority is due to women's inferior qualifications. We will decompose the gross sex difference in authority into three components: that due to composition on qualifications; that due to differential effects of these factors; and that due to the interaction between the two (Winsborough and Dickinson, 1971; Althausen and Wrigler, 1972; see Fligstein, 1976, or Halaby, forthcoming, for an example). The component due to differential composition of the sexes on these five factors represents the amount of the sex difference that is due to the fact that women have inferior qualifications (less labor force experience, education, or tenure with current employer or family situations which inhibit their assuming positions of authority). We use the reduced-form equations to derive such an estimate in order to obtain an upper bound estimate of the amount due to inferior qualifications. It is essential to identify the extent to which this explanation is operating as women presumably could increase their authority in the workplace by improving their qualifications. Here we are making the assumption that women are unable to improve, through their own actions, their returns on these characteristics. That portion of the sex difference in authority that is not attributable to composition on these characteristics is due to either of our other two explanations or other unspecified arguments.

In order to assess the importance of the behaviors and policies of employers and the attitudes and behaviors of women, we estimate the following equation separately for each sex.

$$A = f(\text{Ed, Exp, Ten, Cm, Chdn, Male, Unlabeled, Status}), \quad (2)$$

where Male is whether or not an individual is in a job that is predominantly male, Unlabeled is whether or not an individual is in a job that is not sex-typed, and Status is the occupational status of the job. These variables represent different characteristics of jobs.² There is an implicit ordering here. The human capital and family factors are attributes that an individual brings to the workplace, while the measures of job characteristics reflect aspects of the position an individual occupies in the work setting. Both sets of factors are expected to affect the probability of having authority in the work setting.

The parameters in these equations give us a mapping of how people get into positions of authority in the workplace and indicate how the effects of exogenous variables tapping qualifications are mediated by characteristics of jobs. Our ability to ascertain the extent to which women's and employers' behaviors affect the restriction of women from supervisory positions derives from the decomposition of the effects of job characteristics in these equations. That component due to composition on job characteristics could be due to either of two factors: women's or employers' behaviors. Some women may not desire positions with a lot of responsibility over the work of others. If this were the case, one might expect these women

² Some critics of this paper were uneasy with our measures of characteristics of jobs. For example, one argued that we ought to include major occupation groups or at least a dummy variable for whether the individual was in the census major group manager or not. Although we had considered this, the results of such models would, we thought, be tautological. Another critic felt that it was inappropriate to include prestige as one could argue that authority causes prestige. This argument is sensible if one uses occupational prestige to mean a measure of social honor. Here, we use occupational status as an attribute of the job which pertains to the "goodness" of that position. We are not concerned with social honor per se, but rather the extent to which the goodness of a job affects the likelihood of exercising authority. Clearly, these are different interpretations of the status and prestige metrics. Given the selection of status rather than prestige, and given that we interpret status as a characteristic of a job and not a measure of the general social standing of the individual, we feel that we are justified in including it in our models as prior to authority in the workplace.

to select positions which have a low probability of having any authority. For example, some women may choose female sex-labeled jobs with the expectation that they will entail few responsibilities which involve controlling the work of others. On the other hand, employers, because of their beliefs about women's ability to perform in supervisory positions, may direct or track females into positions which have little likelihood of involving supervision. Thus, the component of the sex difference in authority due to composition on job characteristics could be due either to women's or employers' behaviors. However, the job characteristics rates component is almost entirely due to the behavior of employers. If men get different amounts of authority than women for being in a high-status occupation, net of qualifications and sex-label of job held, then these differences must be due to the fact that employers are treating men and women disparately. Although we are not able to uniquely attribute portions of the sex gap in authority to the behaviors of employers and women, we can, through this decomposition, ascertain the relative importance of these two factors for the restriction of females from positions of authority.

In short, our regressions and subsequent decompositions will achieve two goals: (1) show the differential effects by sex of human capital, family characteristics, and job characteristics on the allocation of men and women into positions of authority; and (2) allow us to assess the relative importance of these three kinds of factors for the restriction of females from positions of authority.

Data, Variables, and Analytic Technique

Data. The data are from the Wisconsin Study of Social and Psychological Factors in Socioeconomic Achievements; this is a longitudinal study of a random sample of 10,317 persons who were seniors in Wisconsin high schools in 1957 (Sewell and Hauser, 1975). A follow-up study of the members of the sample was executed during 1975; completed interviews of 9,138 respondents (or 88.5% of the original

sample) were obtained. The data for these analyses are drawn from the 1975 follow-up interviews. Using this data set means that there are no individuals with less than 12 years of education included in the sample. The results cannot be generalized to non-high school graduates. Furthermore, we are investigating the distribution of authority at midlife (around age 37) and our results do not address the issue of the distribution of authority in the work setting for the total working population or for one cohort earlier or later in their life course. One could argue that by observing individuals at midlife, there does not exist sufficient variation in the dependent variable, as individuals might be more likely to have authority in the work setting later in their life course. This is not problematic as evidenced by the marginal distributions on the authority variables which are presented in Table 1.

The present analysis concerns 3,359 men and 2,254 women: (1) who were employed in the civilian labor force during the week of the survey in 1975; (2) who were not self-employed; and (3) for whom data were available on all-relevant variables. The largest sample attrition for females was due to the current employment restriction. Although information on authority was obtained for all individuals who had worked in the last five years, we could not construct the experience or ten-

Table 1. Means and Standard Deviations of Variables Used in the Analyses

	Males (N=3,359)		Females (N=2,254)	
	Mean	Standard Deviation	Mean	Standard Deviation
Hire-Fire	.280	.449	.088	.284
Pay	.374	.484	.141	.348
Supervise	.607	.488	.378	.485
Education	1.90	2.44	1.10	1.89
Experience	.818	.156	.585	.258
Tenure	90.5	60.5	47.5	53.7
Currently				
Married	.892	.310	.789	.408
Children	.870	.336	.811	.391
Status	50.8	22.8	46.1	20.1
Male				
Occupation	.633	.482	.062	.241
Unlabeled				
Occupation	.345	.475	.370	.483

ure variables for those who were not currently employed. It could be argued that, since women move in and out of paid employment, one could obtain a clearer picture of sex differences in authority by including in the sample women who had been employed during the last five years but who were not currently employed. An inspection of the distribution of the authority variables by current employment status for women indicates that women who are currently employed are much more likely to be in positions of authority in the workplace than were women who were not currently employed but had been employed during the last five years. This suggests that our exclusion of women who were not currently employed but did have recent work experience will result in an underestimation of the female disadvantage in authority in the workplace.³

We also have excluded self-employed people. Our three explanations related to why women as employees do not assume positions of authority within an economic organization. It should be noted that there are other ways to obtain authority in the workplace. Self-employed individuals who have others working for them have authority on the job. Men are more likely than women to be self-employed (U.S. Bureau of the Census, 1973; Wolf and Fligstein, forthcoming) and to have more authority if they are self-employed. Since the processes by which an individual obtains authority as an employee are probably quite different from the mechanism by which self-employed workers gain authority over others, we have decided to exclude self-employed people.

Variables. The dependent variables on authority in the workplace are derived from yes-no responses to the following set of questions:

- (1) I have authority to hire or fire others.
- (2) I can influence or set the rate of pay received by others.
- (3) I supervise the work of others, that is, what they produce or how much.

As earlier stated, these questions tap the amount of control over the work of others an individual has in the workplace.⁴ In our analyses, we treat these questions separately as dependent variables. Our decision to treat these as distinct aspects of authority was based on the conclusion that any scale combining these three aspects might mask or camouflage important sex differences in authority in the workplace. Having responsibility to hire and fire and/or determine pay represents a much higher level of authority than does having the responsibility of supervising others. It is probably the case that the processes by which people obtain these higher levels of authority are quite different from the manner in which people obtain these lower supervisory positions. In short, it is likely that women are discriminated against less in acquisition of positions with mere supervisory power than in their attainment of positions with more responsibility. Averaging these differences over level of supervision would not allow us to discriminate these different processes. Furthermore, different scaling options created methodological problems.⁵

³ It is also possible that the process of acquiring authority in the workplace differs for currently employed and those who are not currently employed but had worked in the last five years. In short, we may have a censoring problem (see Heckman, 1974, and Fligstein and Wolf, 1978, for discussion of this problem). It is reasonable to argue, however, that if those not currently employed but employed within the last five years were included, the differences between the parameters for the sexes would be more divergent than they are in our current analysis.

⁴ There is an extensive literature on authority in organizations (Weber, 1947; Azumi and Hage, 1972; Mechanic, 1962; Blau, 1964; 1968; Blau and Scott, 1962; Thompson, 1967; Crozier, 1964; Hall, 1972, to mention a few). This literature is mainly concerned with the levels of authority within organizations and in particular at what level various kinds of decisions are made (locus of control). Further this literature is interested in different dimensions of authority (or power). For example, distinctions between professional and bureaucratic authority, or traditional, legal, and charismatic authority are important. Our interest is not in the structure of organizations, but in the individual distribution of authority. From our point of view, it is also not critical to understand what the source of authority is (for example, is it professional or bureaucratic?), but rather our interest is in how much control an individual has.

⁵ Although these three variables form a Guttman scale, one could not assume that the scale was an interval one. Scales derived from factor analysis

Education is measured by the number of years of formal schooling completed *after high school*. Experience is measured by 1-Time Out, where Time Out is the proportion of months between high school graduation and the time of the interview when the respondent was known to be out of the civilian labor force. For males, we used detailed information on the timing of all levels of schooling, military service, and work in 1974 as a way to assign an individual's months as out of the civilian labor force. For females, additional information was used to code months as out of the civilian labor force: (1) did they work in every relevant interval between important life cycle events;⁶ (2) how long (in weeks) after the beginning of the interval did they return to work; (3) how long (in weeks) before the end of the interval did they quit working; and (4) how many hours a week did they work during the interval? The use of this additional information in constructing the experience measure for females results in a very good measure for them. Since this additional information was not available for men, we could not provide an exact equivalent for males. The measure for males slightly overestimates labor market experience since we must assume that men were employed when they were not in school or in the military. This is not an unreasonable assumption since a sample of predominantly white males with a high school education usually are employed quite regularly throughout their life course. It should be noted that utilizing this additional data for females when it is not available for men is much preferable to the

other two alternatives available to us. If we had utilized the well-known formula for experience, $AGE - SCHOOLING - 6$, we would have found that women had slightly more experience than men since age is fairly constant in the sample and women obtain less schooling than men do. If we had used only the information that we had for both sexes to assign months to not employed in the civilian labor market, we would have found that women had quite a bit more experience than men because of the schooling differential and the enormous sex differential in time spent in the military. Both of these options distort the data. Furthermore, since one of our goals is to attribute some of the sex difference in authority to women's employment histories, it is mandatory that we have the best available measure of experience. Our measure is clearly superior to the other alternatives available in this data set and to most of the other commonly used measures of experience for men and women.

Tenure is measured by the number of months from the time the individual first started working at the place of current employment to the time of interview minus the number of months during this period that the individual was known not to be working.⁷ The latter correction for time not working was made because females are more likely to have intermittent employment; it is possible that even though they started work with their cur-

were problematic because of the interpretation of standardized and metric coefficients. Interpreting metric coefficients is problematic since a one-unit change in the dependent variable has little intuitive meaning. Similar kinds of problems arise with the interpretation of standardized coefficients, especially when comparing across populations (i.e., the sexes).

⁶ The intervals were (depending on the number of live births): marriage to first birth, first births to second birth, second birth to third birth, third birth to fourth birth, next to last to last birth (if more than four children). We also have information on the interval end of last period to time of interview where end of last period was marriage for those with no children and the last live birth for those with children.

⁷ The tenure question harbors some ambiguities. The question is: In what month or year did you start working there? It appeared directly following a question concerning the name and place where he/she worked. The problem is that the word "there" lacks a referent. That is, it is unclear whether it refers to a geographical location or a parent firm. This ambiguity is not too problematic for females as their geographic mobility is restricted to some extent by their families and rarely will the women's occupational mobility result in the geographic movement of the whole family. For men, upward occupational mobility is often accompanied by geographic mobility from one establishment to another within a parent firm. If some men conceive of "there" as referring to local establishment, it is possible that time "there" (tenure) would be negatively related to positions of high authority, and tenure at firm may be underestimated. It is hard to judge the extent of this problem. However, it is reassuring to note that men's tenure levels are much higher than women's. Further, this ambiguity may arise only for a small number of men.

rent employer several years ago, they may have interrupted their employment. Thus, tenure measures the number of months worked at current place of employment.

Currently married is measured by a dummy variable which assumes a value of one if the person is currently married and a zero otherwise. This variable taps the extent to which the presence of a spouse (and the incumbent realities of his/her work) restricts access to authority in the work setting due to restricted geographical mobility and travel for work.

Children is measured by a dummy variable which assumes a value of one if the individual has had any live births and zero otherwise. We dichotomized this variable because it is not the number of children but the presence of a child which might restrict mobility of females.

Sex composition of the individual's occupation is tapped by two dummy variables. Male occupation is a dummy variable for whether the individual was in an occupation which is 0% to 14% female; unlabeled occupation is a dummy variable for whether the individual was in an occupation which is 15% to 74% female; the omitted category is female occupation (75% to 100% female). We used the 1970 Census of the Population Subject Report on Occupational Characteristics to determine the percentage female in each three-digit occupation. There are a variety of ways to operationalize sex-label of occupation. For example, Oppenheimer (1970) considers an occupation disproportionately female when the occupation contains a higher proportion of female workers than the labor market as a whole. For these analyses, we chose to designate highly sex-segregated occupations as male and female occupations and to include an unlabeled category which is quite heterogeneous with respect to sex composition.

Status is the occupational status (Duncan, 1961; Featherman et al., 1974) of the current job.

Analytical technique. In our analyses, we use multiple regression with a dummy dependent variable as well as decomposition techniques. Since the dependent variable is a dichotomy, the estimate of the dependent variable produced by the model can be interpreted as the probability

that an individual had that aspect of authority. There are problems using ordinary least squares when the dependent variable is dichotomous (Goldberger, 1964); these can be particularly problematic when the mean probability does not range between .25 and .75. We chose to use ordinary least squares for two reasons: (1) four of the six dependent variables have mean probabilities within the .25 to .75 range; and (2) various kinds of log-linear models presented other serious problems. One consequence of this decision is low R^2 values.

Results

Table 1 presents means and standard deviations on all variables in the analysis. From the first three rows, we can see the extent of the gross sex differences in authority. These sex differences are quite large: 28% of male employees have the responsibility to hire and fire others while only 8.8% of the women do. In terms of control over the pay of others the comparable figures are 37.4% (male) and 14.1% (female). Sixty and seven-tenths percent of the men supervise others while 37.8% of the women do. The absolute difference between the male and female means is about the same (.21) on all three dimensions. In short, women have much less authority as employees in firms than men do, regardless of what aspect of authority is considered. We shall not discuss the rest of the table except to say that the means and standard deviations of the explanatory variables are as expected.⁸

Table 2 presents parameters for Equation (1) (the reduced-form equation for each sex). The columns labeled *sex difference* are the results for regressions pooled for the sexes. The parameters in those columns represent the effects of the interaction terms between sex and the variables in the pooled model and thus

⁸ The sex differences in education are larger than are obtained from national cross-sectional samples (Treiman and Terrell, 1975; McClendon, 1976; Featherman and Hauser, 1976). This results from the fact that our sample includes only high school graduates. Women are more likely to finish high school but are less likely to complete each subsequent year (Folger and Nam, 1967).

Table 2. Regression of Three Aspects of Authority on Human Capital and Family Factors by Sex

	Hire-Fire			Pay			Supervise		
	Males Metric (SE)	Females Metric (SE)	Sex Differences Metric (SE)	Males Metric (SE)	Females Metric (SE)	Sex Differences Metric (SE)	Males Metric (SE)	Females Metric (SE)	Sex Difference Metric (SE)
Education	.039* (.005)	.014* (.004)	.025* (.006)	.043* (.005)	.014* (.004)	.029* (.007)	.050* (.005)	.056* (.005)	-.007 (.007)
Experience	.061 (.075)	.110* (.032)	-.049 (.078)	-.035 (.080)	.216* (.039)	-.251* (.087)	-.021 (.081)	.298* (.053)	-.319* (.096)
Tenure	-.00028* (.00013)	.0004* (.00014)	-.00068* (.00022)	-.00018 (.00014)	.00039* (.00017)	-.00057* (.00024)	.00012 (.00014)	.0008* (.0002)	-.00068* (.00027)
Currently Married	.040 (.028)	.018 (.017)	.021 (.034)	.052 (.031)	.026 (.020)	.025 (.038)	-.004 (.031)	.0009 (.028)	-.004 (.042)
Children	.114* (.026)	-.020 (.020)	.133* (.036)	.079* (.028)	.015 (.024)	.064 (.040)	.105* (.028)	.020 (.033)	.085 (.044)
Constant	.049	.009	-.177	.230	-.048	-.216	.439	.085	-.587
R ²	.052	.034	.100	.057	.036	.113	.064	.084	.119

* Significantly different from zero at the .05 level.

indicate whether the sex differences are statistically significant. These parameters indicate the total effects of human capital factors as well as the effects of family characteristics on the acquisition of authority in the workplace. As expected, the parameters indicate marked sex differences: Post-high school education is an important mechanism by which both men and women obtain authority, as witnessed by the size and statistical significance of its effects. Men and women obtain quite different authority returns on these investments, at least at higher levels of authority.⁹ In terms of gaining access to positions with the responsibility to hire and fire and/or determine pay, men receive about three times the return to each year of post-high school education than women do. For example, in the hire and fire equation, for each additional year of post-high school education, a man's probability of being responsible for hiring and firing others increases about 4% for each additional year whereas the comparable figure for women is 1.5. Similar patterns appear in the pay equation. Other than the fact that women get fewer payoffs for their schooling, these differences may reflect the divergent types of major fields of study chosen by men and women in post-high school education. For example, one would expect a man who majored in business to have greater access to a position of authority than a woman with a degree in nursing. Sex differences in returns to education do not appear in access to positions with mere supervisory power. Therefore, it appears that the lower the level of authority considered, the more egalitarian is the process of acquiring that level of authority, at least with respect to education.

The effects of experience are essentially similar across all aspects of authority. For men, experience has no effect on authority. There are two possible explanations for this lack of effect. First, the kind of interruptions in employment that could

affect men's acquisition of authority are not necessarily being tapped by our experience measure. Second, there is little variance in experience for men in our sample and in the population of white male high school graduates at large. In other words, males tend to work almost continuously and the only interruptions we measure (for education and military) do not affect their acquisition of authority in the workplace. Experience has substantively important, statistically significant, positive effects on all aspects of authority for women. If a woman had been in the civilian labor market all months from high school graduation until the time of interview instead of none, her probability of hiring and firing others would increase by .11, of having responsibility for pay would increase by .22, and of supervising others would increase by .30. The pattern suggests that experience has its largest effects on acquisition of lower levels of supervision. Although these effects are quite large, they are not as large as they seem, since a one-unit change in experience is the full range of the variable. The experience effect for women is probably due to the fact that: (1) increased work experience results in an increase in on-the-job training, which makes an individual more capable of assuming positions of responsibility; and (2) employers consider past employment history as a good indicator of women's current and future commitment to work in the paid labor force.

Tenure with current employer has quite different effects on authority for men and women. For women, tenure has a positive, statistically significant effect on each aspect of authority; however, these effects are not very large. A five-year increase in time with current employer increases the probability of hiring and firing or determining pay by .024; the comparable increase in the probability of supervising others is .048. For men, tenure with current employer only has a negative, statistically significant effect on the probability of hiring and firing others; however, the effect is very small such that a five-year increase in tenure reduces the probability of hiring and firing by .017. This small negative effect could be caused

⁹ By higher levels of authority, we mean ability to hire, fire, and determine pay. We discuss these together as these two equations appear remarkably similar for each sex. Clearly, our measures do not tap the highest levels of authority: the ability to make decisions concerning the creation and discontinuation of actual positions.

by two factors: (1) for men, highest level management positions often are filled from outside the firm rather than from within; and (2) the ambiguity of the question used to construct tenure for men who simultaneously experienced upward occupational mobility and geographical mobility (see fn. 7). In general, access to positions of authority in economic organizations is minimally affected (if at all) by tenure with current employer for men. However, for females, tenure with current employer has small effects on access to higher level supervisory positions and somewhat more of an effect on access to lower level positions of authority. The effects of tenure for women have two possible explanations: (1) women receive higher returns to on-the-job *firm*-specific training since higher level female managers often are produced from within rather than brought from outside (because of a presumed lack of qualified female managers); and (2) employers use length of service as an indicator of a woman's commitment to the employer and the paid labor force.

The two other variables in the reduced-form equations of Table 2 are whether the individual is currently married and whether the individual had any children. It is possible that women are restricted from positions of authority due to their limited geographical mobility and restrictions on travel for work purposes due to the presence of a spouse and/or children. There is no evidence for this, since each of these variables relating to a woman's family situation lacks substantively important effects on any aspects of authority. That these variables lack effects for females is neither surprising nor in conflict with earlier arguments. There are three ways in which the presence of children and marital status could affect women's access to authority: (1) women could be staying at home with children or being housewives, thereby reducing their work experience and job tenure; (2) women could be restricted in their ability to travel for work purposes or their geographic mobility could be limited by their spouses; and (3) other unspecified possibilities could be operating. Since tenure and experience are controlled in this equation, the vari-

ables indicating whether or not children are present and whether or not the woman is married would only have significant effects if the latter two factors were important. Although women's family factors may be related to their experience and tenure, they do not have any direct effects on authority.

The presence of children has a persistent nontrivial positive effect on each aspect of authority for men. This result is a bit surprising (but see Cramer, 1977, and Duncan et al., 1972). There are three possible explanations for this result. First, men with children may work harder because of the need to support additional individuals (Duncan et al., 1972:243). Second, men without children may be freer to consider other aspects of jobs besides earnings and power than are men with children. Third, the small group of men who have not had children by age 35 may be handicapped, ill, or may have spent a portion of their adult lives in institutions. All of these explanations are compatible with Cramer's (1977) finding that having a child positively affects a man's earnings, net of any increase in hours worked.

Table 3 presents a decomposition of the gross sex difference in different aspects of authority into three components: that due to compositional differences on human capital/family factors between the sexes; that due to differential rates of returns on

Table 3. Decomposition of the Authority Gap Using Only Human Capital/Family Factors

A. Responsibility to Hire and Fire Others		
Component	Gross	Percentage
Total	.192	100.0
Composition	.055	28.6
Rates	.149	77.6
Interaction	-.012	-6.2
B. Responsibility for Pay of Others		
Component	Gross	Percentage
Total	.233	100.0
Composition	.086	36.9
Rates	.212	91.0
Interaction	-.065	-27.9
C. Responsibility to Supervise Others		
Components	Gross	Percentage
Total	.229	100.0
Composition	.147	64.2
Rates	.192	83.8
Interaction	-.110	-48.0

human capital/family factors; and that due to an interaction between composition and rates. The males are used as a standard in this analysis. It should be noted that these decompositions are not unique as different standard populations could produce different results. Here, the choice of males as the standard was based on the fact that females have less authority than men and our interest is in seeing how the positions of females would be improved under different situations.

The purpose of this particular decomposition is to indicate the extent to which the restriction of females from positions of authority is due to their inferior qualifications. The extent of the sex difference due to this factor is measured by the component due to composition. This component indicates how much of the sex difference in authority would be alleviated if women had the same amount of education, experience, tenure, and the same family situations as men did but still had their own returns on these characteristics. Two-sevenths (28.6%) of the sex difference in the probability of hiring and firing others would disappear if women were as well-qualified as men on these factors; the comparable figure for the sex difference in control over pay is 36.9% and for supervising others it is 64.2%. The percentages of the sex difference in authority due to composition is nontrivial, suggesting that part of the reason women are excluded from positions of authority is their inferior qualifications. However, with respect to all three aspects of authority in the workplace, that proportion of the sex difference due to women's inferior qualifications is smaller than that due to differential returns on individual characteristics. Thus, even though the component due to women's inferior qualifications is significant, this is not the most important reason for women's restrictions from positions of authority. Last, the percentage of the sex difference that is due to women's inferior qualifications depends on level of authority; the higher the level of authority the smaller the percentage of the sex difference explained by women's qualifications. If women and men were equally well-qualified on human capital and family factors, women would still have very re-

stricted access to the higher level supervisory positions.¹⁰

The second half of our analyses allows us to assess the extent to which sex differences in authority are caused by women's and employers' behaviors. Table 4 presents parameters from equations predicting authority in the workplace where the independent variables are not only human capital/family factors but also certain characteristics of jobs. In our discussion of this table, we shall consider the two aspects of authority which represent upper level supervisory responsibilities together since patterns of effects are similar across these two aspects. Our discussion of these equations centers on two main issues: (1) the extent to which the exogenous variables are mediated by the characteristics of jobs; and (2) the differential effects of job characteristics.

In the equations predicting an individual's probability of hiring and firing or having control over pay, we find marked sex differences with the addition of job characteristics. Education has a statistically significant effect for men but not for women; about 70% of the effect of post-

¹⁰ It is necessary to assess the extent to which the component of the sex gap in authority that is due to women's inferior qualifications is over- or underestimated. There are two arguments suggesting that this component is overestimated and one suggesting that it is underestimated. First, because the decompositions are calculated from the reduced-form equations, they produce an upper bound estimate of the importance of composition on qualifications. This is because we are tapping the total effects of these variables; clearly, some of the effects are mediated by job characteristics. Second, since work experience may be slightly overestimated for men, the component due to composition on human capital/family factors is overestimated somewhat because if there were no measurement error, the mean on experience for men would be lower. The component due to composition could be underestimated as our measure of education does not tap the differences in the major areas in which men and women receive training. That is, part of the large differences in the effects of education on authority for men and women may be due to the fact that men (more than women) may choose college majors which increase their access to positions of authority. If measures of majors were included, the rate differences between men and women for years of schooling could decrease, and the composition differences in college majors could explain more of the authority gap between men and women. Thus, the differences due to composition could be underestimated.

Table 4. Regressions of Three Aspects of Authority on Human Capital/Family Factors and Job Position Variables by Sex

	Hire-Fire				Pay				Supervise			
	Males		Sex Differences		Males		Sex Differences		Males		Sex Differences	
	Metric (SE)	Females Metric (SE)	Metric (SE)	Metric (SE)	Metric (SE)	Females Metric (SE)	Metric (SE)	Metric (SE)	Metric (SE)	Females Metric (SE)	Metric (SE)	Metric (SE)
Education	.012* (.005)	.00038 (.0038)	.012 (.007)	.015* (.005)	-.002 (.005)	-.002 (.005)	.017* (.008)	.018* (.005)	.034* (.006)	-.016 (.0083)		
Experience	.115 (.072)	.085* (.031)	.029 (.076)	.021 (.077)	.188* (.039)	.188* (.039)	-.167* (.084)	.040 (.077)	.255* (.052)	-.215* (.093)		
Tenure	-.0002 (.00013)	.0003* (.00013)	-.0005* (.0002)	-.00009 (.00014)	.0003 (.00016)	.0003 (.00016)	-.0004 (.00024)	.00022 (.00014)	.0007* (.0002)	-.00044 (.00026)		
Currently Married	.024 (.027)	.021 (.016)	.003 (.033)	.035 (.030)	.828 (.821)	.828 (.821)	.007 (.037)	-.023 (.029)	-.0009 (.027)	-.022 (.040)		
Children	.095* (.025)	-.021 (.020)	.116* (.034)	.059* (.027)	.011 (.025)	.011 (.025)	.048 (.039)	.085* (.027)	.010 (.033)	.075 (.043)		
Status	.006* (.0004)	.002* (.0003)	.004* (.0005)	.006* (.0004)	.003* (.0004)	.003* (.0004)	.0034* (.0006)	.007* (.0004)	.004* (.0005)	.003* (.0007)		
Male	.189* (.051)	.156* (.024)	.032 (.055)	.240* (.055)	.104* (.030)	.104* (.030)	.136* (.062)	.092 (.054)	.064 (.041)	.028 (.068)		
Unlabeled	.137* (.051)	.057* (.012)	.080 (.048)	.193* (.055)	.038* (.015)	.038* (.015)	.155* (.053)	.019 (.055)	-.005 (.021)	.024 (.059)		
Constant	-.399	-.110	-.074	-.284	-.158	-.158	-.110	-.045	-.041	-.012		
R ²	.122	.072	.160	.120	.060	.060	.163	.144	.108	.173		

* Significantly different from zero at .05 level.

high school education is mediated by job characteristics for men while all of the effect of education is mediated by these characteristics for women. This means that education is important in women's access to positions which involve high level supervision *only* because it helps to place them in jobs which have higher likelihoods of having these responsibilities. For men, however, post-high school education is not only important because it helps locate them in certain jobs that have high probabilities of having authority, but also because, net of job characteristics, men's educational credentials give them access to additional authority in the workplace. The effects of experience and tenure for females are only partially mediated (15% to 25%) by job characteristics; that is, net of the occupational status and sex-label of the job held, experience and tenure have, in three out of four cases, positive, small but statistically significant effects on the probability of having high amounts of authority. The fact that these effects persist suggests that regardless of position, additional experience and the implication of higher career commitment increase a female's probability of assuming positions with a higher level of authority.

In terms of access to positions involving high levels of supervision, the job characteristics included in the model have stronger effects for men than women. A ten-point increase in occupational status produces an increase in the probability of hiring and firing or determining pay of .06 for men. For women, the comparable result from a ten-point increase is .02 for the probability of hiring and firing and .03 for the probability of control over pay. Thus, in general, being in a higher status position increases a person's probability of assuming considerable control over the work of others. However, for each additional increment in status, the authority returns are two to three times larger for men than for women. This implies that, for men, being in a high status position often goes hand in hand with being in a position of authority, whereas for women, this is much less likely to be so. Of course, one could argue that this results from the fact that status measures

different things for men and women. For evidence that this is not the case, see Bose (1973).

We can also discern a general pattern of the effects of sex-typing of occupations on access to high levels of supervision. For both males and females, being in a male-labeled job (relative to a female one) and to a lesser extent being in an unlabeled job (relative to a female one) greatly increases an individual's access to positions of authority. These effects are quite large. For example, for males, being in a male occupation increases the probability of hiring and firing by .189; the comparable figure for an unlabeled occupation is .137. The effects of sex-label of job held are smaller for females; however, the sex differences are only statistically significant in the pay equation. These powerful effects of sex-label of job suggest that the concentration of females in female-labeled jobs is an important factor restricting females from positions of authority.

The differences in the processes by which the sexes gain access to positions with mere supervisory power follow the same general pattern as was found in the other two aspects of authority; we shall just highlight the main differences. First, 60% of the effect of education on the probability of supervising is unmediated by the characteristics of job position included in this model for women, whereas only 36% of the effect for men is unmediated. While the sex differences in the effect of occupational status are still large, they are not as large as they were in the case of higher levels of supervision. These two differences suggest that access to mere supervisory power is a bit more egalitarian than access to higher level supervisory positions. Sex-typing of occupation has no effect on the probability of supervising for either sex. Thus, the fact that women are highly concentrated in female jobs is not a good explanation for sex differences in supervision. Furthermore, these differences across dimensions of authority exemplify the necessity of inspecting each aspect separately.

Table 5 presents a decomposition of sex differences in different aspects of authority within economic organizations. The Appendix describes how these calcu-

Table 5. Decomposition of the Authority Gap Using Human Capital/Family Factors and Job Characteristics

	Hire-Fire		Pay		Supervise	
	Gross	Percentage	Gross	Percentage	Gross	Percentage
Total (A)	.192	100	.233	100	.229	100
Human Capital/Family Factors						
Total (B)	.128	66.67	-.020	-8.58	-.092	-40.17
Composition (C)	.023	11.98	.072	30.90	.112	48.91
Rates (D)	.092	47.92	-.040	-17.17	-.127	-50.46
Interaction (E)	.013	6.77	-.052	-22.32	-.077	-33.62
Job Characteristics						
Total (F)	.338	176.04	.376	161.37	.228	99.56
Composition (G)	.086	44.79	.085	36.48	.050	21.80
Rates (H)	.205	106.71	.217	93.13	.143	62.40
Interaction (I)	.047	24.48	.074	31.75	.035	15.35
Interaction (J)	-.274	-142.71	-.123	-52.79	.093	40.60

lations were done. As earlier stated, this particular decomposition allows us to begin to assess the relative importance of the attitudes and behavior of women and the behaviors and policies of employers for the restriction of females from positions of authority. It should be noted that we view this as a first step in understanding the relative importance of these two factors. The component of the sex difference due to all aspects of human capital/family factors is not of much interest in this respect. It is only of interest to note that in models where certain characteristics of jobs as well as human capital/family factors are held constant, the amount of the sex difference due to human capital/family factors is much smaller than that due to characteristics of job positions. This merely indicates that the effects of exogenous variables are mediated through characteristics of jobs. In all instances, the component due to composition on human capital/family factors is positive since males have higher mean levels on these exogenous variables than females. For this particular model, the negative rates component of human capital/family factors arises when more of the effects of exogenous variables are mediated by job characteristics for men than for women. As discussed earlier, the decomposition of the influence of job characteristics allows us to ascertain the extent to which women's and employers' behaviors affect the restriction of women from positions of authority. That component due to composition on job factors could result from either women's or em-

ployers' behaviors. This is because women who are inhibited about taking positions of authority may choose job positions with little opportunity of obtaining authority. At the same time employers may direct women toward such job positions. The amount of the difference due to rates on job characteristics, on the other hand, is due almost entirely to the behaviors and policies of employers. If men get different amounts of authority than women for being in a high status occupation, net of human capital/family factors and sex-label of job held, then these differences must be due to the fact that employers are treating men and women unequally.

In Table 5, we note that the component due to the differences in composition on characteristics of jobs is nontrivial. This suggests that if women had the same mean occupational status and the same distribution on sex-label of job held as men, 22% to 40% of the sex difference would disappear. The job characteristics rates components are positive and quite large, suggesting that most of the sex differences in authority could be alleviated if women got the same authority returns to their job characteristics as men did. The component due to differential effects of job position factors is much larger (two to three times) than that due to composition on these factors. Although this is not a unique decomposition, this implies that the behaviors and policies of employers are a much more important explanation of the sex differences in authority than are the attitudes and behavior of women. One

could argue that the rates component is due in part to women's attitudes and behaviors. This is because women might get into positions of high status and income and yet not want to exercise the authority that is often demanded in such positions. The major implication of this is that some part of the job characteristics rates component may not be the result of employers' behaviors and policies. We argue that this is probably a minimal part of the job characteristics rates components since women who are inhibited about assuming positions of authority would not select positions which have a high likelihood of controlling the work of others.

Conclusions

There are two interrelated sets of conclusions that can be drawn from our analyses. The first relates to how men and women attain positions of authority in the workplace and the second concerns the extent to which sexual inequality in authority in the workplace is generated by our three potential explanations. Men are more likely to hire and fire, determine pay and supervise than women. The differential process of acquiring authority is quite complex, at least with respect to human capital/family factors. Men receive higher returns to certain human capital factors while women receive higher returns on others. With respect to job characteristics, it is clear that men get more authority for similar levels of occupational status and sex labeling of job held than women, at least in the access to higher levels of supervision. Further, the process of acquiring mere supervision is more egalitarian between the sexes than is the acquisition of higher levels of authority.

Our decompositions allowed us to ascertain the extent to which our three factors can explain the sex gap in authority. The amount of the sex gap that is due to women's qualification is nontrivial, but is, in all cases, less important than the attitudes and behaviors of women and the behaviors and policies of employers. While the subsequent decompositions do not allow us to identify uniquely the proportion of the authority gap that is due to women's and employers' behaviors, our

results suggest that the behaviors and policies of employers are much more important in the restriction of females from positions of authority. It should be realized that this is a first attempt to explore the sex differences in authority in the workplace. Clearly, a study of large firms which obtained data on employers' and women's attitudes and behaviors would be a relevant step in furthering our knowledge in this area.

The implications of these results suggest sorts of policies needed to produce parity between men and women in the distribution of authority in economic organizations. First, women should be encouraged to improve their qualifications. But this is not enough to alleviate the sex gap in authority in the workplace. More important, steps must be taken to alter the behaviors and policies of employers before women can reach parity with men with respect to authority in the workplace.

APPENDIX

CALCULATION OF DECOMPOSITION FOR TABLE 5

Given that:

$$\bar{A}_M = a_M + \sum_{i=1}^5 (b_{i(HM)} \bar{X}_{i(HM)}) + \sum_{j=1}^3 (b_{j(JM)} \bar{X}_{j(JM)}); (1A)$$

$$\bar{A}_F = a_F + \sum_{i=1}^5 (b_{i(HF)} \bar{X}_{i(HF)}) + \sum_{j=1}^3 (b_{j(JF)} \bar{X}_{j(JF)}), (2A)$$

where \bar{A}_M and \bar{A}_F are the means on authority for males and females; a_M and a_F are the intercepts for males and females; $b_{i(HM)}$ and $b_{i(HF)}$ are the parameter estimates (metric) for the effects of the human capital/family factors on authority for males and females; $\bar{X}_{i(HM)}$ and $\bar{X}_{i(HF)}$ are the means of human capital/family factors for males and females; $b_{j(JM)}$ and $b_{j(JF)}$ are the parameter estimates (metric) for the effects of characteristics of jobs on authority for males and females; and $\bar{X}_{j(JM)}$ and $\bar{X}_{j(JF)}$ are the means of the characteristics of jobs for men and women.

The total difference to be decomposed (A) is:

$$\bar{A}_M - \bar{A}_F. (3A)$$

The human capital/family total component (B) is:

$$(a_F + \sum_{i=1}^5 (b_{i(HM)} \bar{X}_{i(HM)}) + \sum_{j=1}^3 (b_{j(JF)} \bar{X}_{j(JF)})) - \bar{A}_F. (4A)$$

The human capital/family composition component (C) is:

$$(a_F + \sum_{i=1}^5 (b_{i(HF)} \bar{X}_{i(HM)}) + \sum_{j=1}^3 (b_{j(JF)} \bar{X}_{j(JF)})) - \bar{A}_F. (5A)$$

The human capital/family rate component (D) is:

$$(a_F + \sum_{i=1}^5 (b_{KHM} \bar{X}_{i(HF)}) + \sum_{j=1}^3 (b_{KJF} \bar{X}_{j(KJF)})) - \bar{A}_F. \quad (6A)$$

The human capital/family interaction component (E) is:

$$B - (C + D). \quad (7A)$$

The job characteristics total component (F) is:

$$(a_F + \sum_{i=1}^5 (b_{i(HF)} \bar{X}_{i(HF)}) + \sum_{j=1}^3 (b_{j(KJM)} \bar{X}_{j(KJM)})) - \bar{A}_F. \quad (8A)$$

The job characteristics composition component (G) is:

$$(a_F + \sum_{i=1}^5 (b_{i(KHF)} \bar{X}_{i(KHF)}) + \sum_{j=1}^3 (b_{j(KJF)} \bar{X}_{j(KJF)})) - \bar{A}_F. \quad (9A)$$

The job characteristics rate component (H) is:

$$(a_F + \sum_{i=1}^5 (b_{i(HF)} \bar{X}_{i(HF)}) + \sum_{j=1}^3 (b_{j(KJM)} \bar{X}_{j(KJM)})) - \bar{A}_F. \quad (10A)$$

The job characteristics interaction component is:

$$F - (G + H). \quad (11A)$$

The overall interaction component is:

$$A - (B + F). \quad (12A)$$

It should be obvious that whether one considers the intercept as part of the rates of human capital/family factors or characteristics of jobs is totally arbitrary. Since there were dummy variables in each set of variables, the intercept is the amount of authority a currently unmarried, childless individual in a female occupation has. Since it seemed arbitrary as to which rate it is, the intercept difference is, by default, included in the Total Interaction term.

REFERENCES

- Althauser, Robert P. and Michael Wrigler
1972 "Standardization and component analysis." *Sociological Methods and Research* 1:97-136.
- Azumi, Koya and Jerald Hage
1972 *Organizational Systems*. Lexington: Heath.
- Bernard, Jessie
1976 "Historical and structural barriers to occupational desegregation." *Signs* 1:87-94.
- Blau, Francine and Carol Jusenius
1976 "Economists' approaches to sex segregation in the labor market: an appraisal." *Signs* 1:181-200.
- Blau, Peter
1964 *Exchange and Power in Social Life*. New York: Wiley.
1968 "The hierarchy of authority in organizations." *American Journal of Sociology* 73:453-67.
- Blau, Peter and W. Richard Scott
1962 *Formal Organizations*. San Francisco: Chandler.
- Bose, Christine
1973 *Jobs and Gender: Sex and Occupational Prestige*. Ph.D. dissertation, Department of Sociology, Johns Hopkins University.
- Boulding, Elise
1976 "Familial constraints on women's work roles." *Signs* 1: 95-118.
- Bowman, G. W., N. B. Worthy, and S. A. Greyser
1965 "Are women executives people?" *Harvard Business Review* 43:14-30.
- Caplow, Theodore
1954 *The Sociology of Work*. Minneapolis: University of Minnesota Press.
- Cramer, James C.
1977 "Microeconomic consequences of childbearing in the United States." Paper presented at the Population Association of America meetings, St. Louis.
- Crozier, Michael
1964 *The Bureaucratic Phenomenon*. Chicago: University of Chicago Press.
- Dahrendorf, Ralf
1957 *Class and Class Conflict in Industrial Society*. Stanford: Stanford University Press.
- Doeringer, Peter and Michael Piore
1971 *Internal Labor Markets and Manpower Analysis*. Lexington: Heath.
- Duncan, Otis Dudley
1961 "A socioeconomic index for all occupations." Chap. 6 in A. Reiss, O. D. Duncan, and C. C. North (eds.), *Occupations and Social Status*. Glencoe: Free Press.
- Duncan, Otis Dudley, David L. Featherman and Beverly Duncan
1972 *Socioeconomic Background and Achievement*. New York: Seminar Press.
- Featherman, David and Robert Hauser
1976 "Sexual inequalities and socioeconomic achievement in the U.S., 1962-1973." *American Sociological Review* 41:462-83.
- Featherman, David, Michael Sobel and David Dickens
1974 "A manual for coding occupations and industries into detailed 1970 categories and a listing of 1970-basis Duncan socioeconomic and NORC prestige scores." Center for Demography and Ecology Working Paper #75-1, University of Wisconsin, Madison.
- Fligstein, Neil
1976 *The Draft, the GI Bill and the Socioeconomic Attainments of U.S. Males: 1940-1973*. Master's thesis, Department of Sociology, University of Wisconsin, Madison.
- Fligstein, Neil and Wendy C. Wolf
1978 "Sex similarities in occupational status attainment: are the results due to the restriction of the sample to employed women?" *Social Science Research* 7:197-212.
- Folger, John K. and Charles B. Nam
1967 *Education of the American Population*. Washington, D. C.: U. S. Government Printing Office.

- Galbraith, John K.
1969 *The New Industrial State*. New York: Pelican Books.
- Goldberger, Arthur
1964 *Econometric Theory*. New York: Wiley.
- Gordon, David M.
1972 *Theories of Poverty and Underemployment*. Lexington: Lexington Books.
- Grimm, James and Robert Stern
1974 "Sex roles and internal labor market structures: the female semi-professions." *Social Problems* 21:690-705.
- Halaby, Chuck N.
Forth- "Sexual inequality in the workplace: an coming employer-specific analysis of pay differentials." *Social Science Research*.
- Hall, Richard
1972 *Organizations: Structure and Process*. Englewood Cliffs: Prentice-Hall.
- Hartmann, Heidi
1976 "Capitalism, patriarchy and job segregation by sex." *Signs* 1:137-70.
- Heckman, James
1974 "Shadow prices, market wages, and labor supply." *Econometrica* 42:679-94.
- Kantor, Rosabeth
1977 *Men and Women of the Corporation*. New York: Basic Books.
- McClendon, McKee
1976 "The occupational status attainment processes of males and females." *American Sociological Review* 41:52-64.
- Mechanic, David
1962 "Sources of power of lower participants in complex organizations." *Administrative Science Quarterly* 7:349-64.
- Myrdal, Alma and Viola Klein
1956 *Women's Two Roles*. London: Routledge and Kegan Paul.
- National Manpower Council
1957 *Womanpower*. New York: Columbia University Press.
- Oppenheimer, Valerie
1970 *The Female Labor Force in the United States: Demographic and Economic Factors Governing Its Growth and Changing Composition*. Population Monograph Series, No. 5. Berkeley: University of California Press.
- Parsons, Talcott
1942 "Age and sex in the social structure of the United States." *American Sociological Review* 7:604-16.
1955 "The American family: its relationship to personality and to social structure." Pp. 3-34 in Talcott Parsons and Robert Bales (eds.), *Family Socialization and Interaction Processes*. Glencoe: Free Press.
- Phelps, A. S.
1972 "A statistical theory of racism and sexism." *American Economic Review* 62:659-61.
- Robinson, Robert V. and Jonathan Kelley
1977 "Marx and Dahrendorf on income inequality, class consciousness and class conflict: an empirical test." Paper presented at the American Sociological Association meeting, Chicago.
- Roos, Patricia
1978 "Sexual stratification in the workplace: male-female differences in economic returns to occupation." Paper presented at the annual meeting of the American Sociological Association, San Francisco.
- Ross, Heather and Isabel Sawhill
1975 *Time of Transition*. Washington, D. C.: Urban Institute.
- Sampson, William and Peter Rossi
1975 "Race and family social standing." *American Sociological Review* 40:201-14.
- Sewell, William and Robert Hauser
1975 *Education, Occupation and Earnings*. New York: Academic.
- Smuts, Robert W.
1971 *Women and Work in America*. New York: Schocken Books.
- Thompson, James D.
1967 *Organizations in Action*. New York: McGraw-Hill.
- Thurow, Lester
1975 *Generating Inequality*. New York: Basic Books.
- Treiman, Donald and Kermit Terrell
1975 "Sex and the process of status attainment: a comparison of working women and men." *American Sociological Review* 40:174-200.
- U. S. Bureau of the Census
1973 *1970 Census of the Population. PC(2)-7A: Occupational Characteristics*. Washington, D. C.: U. S. Government Printing Office.
- Weber, Max
1947 *The Theory of Economic and Social Organization*. New York: Oxford University Press.
- Whyte, William
1949 "The social structure of the restaurant." *American Journal of Sociology* 54:302-10.
- Winsborough, Hallman and Peter Dickinson
1971 "Components of Negro-white income differences." *Proceedings of the Social Statistics Section, American Statistical Association*:6-8.
- Wolf, Wendy C. and Neil D. Fligstein
1979 "Sexual stratification: differences in power in the work setting." *Social Forces*. In press.
- Wolf, Wendy C. and Rachel Rosenfeld
1978 "Sex structure of occupations and job mobility." *Social Forces* 56:823-44.

THE ANTECEDENTS OF COMMUNITY: THE ECONOMIC AND INSTITUTIONAL STRUCTURE OF URBAN NEIGHBORHOODS*

WILLIAM L. YANCEY AND EUGENE P. ERICKSEN

Temple University

American Sociological Review 1979, Vol. 44 (April):253-262

This paper reports the results of an analysis of the institutional structure of 90 census tracts representative of the Philadelphia urbanized area. Ecological positions of the tracts and the social and economic characteristics of local populations are related to the number, type, and distribution of local facilities and services. An examination of the contribution of local facilities to residential stability of the census tracts indicates that the strong zero-order association between local institutional structure and residential stability is spurious, a result of the place of the tracts in the spatial and economic structure of the city.

The analysis of local institutions is an indispensable component of the sociology of urban neighborhoods. Local institutions, organizations and services are central characteristics of many communities (Foley, 1950; Jacobs, 1961; Gans, 1962; Warren, 1963; Hunter, 1975). Hawley (1941:629) noted that speculation on the question of the relationships between institutions and populations

has recurred from time to time in the literature of social science since the day of Adam Smith, but until recently no serious attempt has been made to investigate the relationships; a failure probably due to the lack of adequate data.

Several researchers have since examined some of the relationships between particular institutions and other aspects of the social organization of communities (Gans, 1962; Janowitz, 1967; Molotch, 1972). Local facilities are said to contribute to the stability and cohesion of neighborhoods by providing services, space and activities which are not only necessary for the development of an autonomous community, but also facilitate the development of informal networks among community members. A wide range of re-

search has documented the relationships between participation in organizations and institutions and the development of informal networks (Axelrod, 1956; Litwak, 1961; Breton, 1964; Nelli, 1970). Neighborhood facilities have similarly been shown to be related to the presence of informal networks of neighbors (Foley, 1950; Fried, 1963). Hunter (1975:544) reports that "informal neighboring . . . is positively affected by the degree to which residents use local facilities." While neighboring was related to the expression of a "sense of community" there was no direct relationship found between the use of local facilities and the sense of community (Hunter, 1975:544). Kornblum (1974:80) notes that in Chicago's South Side, "the tavern is among the most important of neighborhood institutions where people can form and maintain friendships with others whom they know well but may not associate with at home." Rossi (1955) has suggested that there is a reciprocal relationship between the stability of populations and facilities such as small grocery stores which depend on contact among residents. Jacobs (1961) argued that the viability and strength of urban areas is dependent on heterogeneous land use. Smith (1975:147), summarizing the major thrust of this literature, notes that

common use of local space may in and of itself be a relatively weak form of local cohesion, but it does reflect an important ecological orientation of local residents to the area

* Address all communications to: William L. Yancey; Department of Sociology; Temple University; Philadelphia, PA 19130.

This research was supported in part by a grant from the Center for the Study of Metropolitan Problems, National Institute of Mental Health (Grant #R01MH25244).

and an interdependence among them for the upkeep and maintenance of these facilities.

Despite this literature, there is reason to believe that hypotheses relating neighborhood stability and cohesion to the presence and distribution of local facilities and services may be false. Thus, although Boston's West End was clearly rich in local institutions, Gans (1962) points out that many were external to the peer group society and served principally as links between the local community and the outside world. The contribution of facilities to stability and cohesion of black communities is suggested by the contrast between the stable interdependent networks which Stack (1974) describes, without reference to a specific community institution, and the unstable friendship networks which were based in part on a corner food carry-out (Liebow, 1967).

We have shown elsewhere (Erickson and Yancey 1979b) that for the period between 1930 and 1970, industrial jobs within urban neighborhoods in 1930 increased their subsequent stability. Industrial neighborhoods characterized by relatively large proportions of working-class families whose breadwinners walked to work (Pratt, 1917; Duncan and Duncan, 1955) were more stable and more resistant to subsequent invasions of blacks. The stability of industrial blue-collar communities also is related to the interpersonal networks found there, i.e., relatively closed circles of local and interdependent friends and relatives (Young and Willmott, 1957; Gans, 1962; Fried, 1963; Kornblum, 1974).

It is also in the studies of the industrial urban villages where emphasis has been placed on local institutions as important antecedents of community stability and cohesion (Young and Willmott, 1957). The observed correlations between institutional development and residential stability may not be direct, but may reflect the socioeconomic character of the population and the position of the community in the larger social structure. The specific objective of this paper is to assess the contribution of local facilities and services to the stability of urban neighborhoods within the broader economic and social parameters which characterize them.

METHODS

Our research strategy was to list all nonresidential uses of space in a representative sample of 90 census tracts in the Philadelphia urbanized area. We then used census and other data to predict the presence and distribution of facilities within the 90 tracts and finally used structural and ecological variables along with measures of local facilities to predict residential stability.¹

Detailed listings of local facilities were obtained by an observer walking around each block in each tract and listing all nonresidential uses of space. The fieldwork was done in the spring and summer of 1975. A total of 11,685 facilities and services were recorded. Of these 1,359 were work places which did not provide goods or services to the local population. They have been eliminated from this analysis which focuses on the remaining 10,326 uses of urban space.

Each facility was initially classified into one of 316 detailed categories. Reliability checks, by independent observers and coders of 15 tracts indicated there was 80% agreement in the observations and coding, despite a six-month time lag between observations. The reliability tests indicated that there was considerable ambiguity between some of the original categories, e.g., luncheonettes, "take-outs," restaurants and bars.

For this analysis the facilities have been placed into eleven relatively broad

¹ This sample was designed for a household survey where equal numbers of interviews were desired from (1) the one-sixth of the Philadelphia Urbanized Area population living in the most residentially stable census tracts, (2) the one-third of the population living in census tracts which included the largest proportion of people who were of foreign stock, i.e., foreign birth or parentage, and (3) the remaining one-half of the population. Tracts included in the first, or *stability* stratum were those where at least 30% of the household heads had lived at the same address since 1949 or earlier. Tracts included in the second, or *ethnicity* stratum were those with less stable populations where at least 23% of the population was of foreign stock. The remaining tracts were designated to be the *control* stratum. Thirty census tracts were selected from each stratum. For the analysis given in this paper, tracts in the *stability* stratum were given one-third the weight of the *control* stratum tracts. *Ethnicity* stratum tracts were given two-thirds the weight of *control* stratum tracts.

categories. These are: *retail stores; small groceries; bars and restaurants; personal and household services*, e.g., barber and beauty shops, automobile repair shops and service stations, craftsmen, home services and repair; *professional services*, e.g., drugs and medicine, banking and finance, social services, funeral directors, business services, real estate, insurance and legal services; *clubs and associations; government services*, e.g., police and fire stations, mass transportation terminals, libraries, parks and recreation areas; *institutionalized churches; storefront churches; schools; and extralocal facilities*, e.g., universities, utilities, cemeteries and hotels which, while available to the local population, provide services to a larger geographic area.

In addition to recording the primary functions of the facilities, observers noted whether they provided space or settings for social gatherings. These were thought to be particularly important for the development and maintenance of social networks. Churches, recreation facilities, bars, restaurants, clubs and meeting halls are examples of gathering places.

Jacobs (1961) has argued that informal networks and neighborhood stability are facilitated by the physical integration of institutions and populations. In order to measure the degree to which the facilities were concentrated on a relatively few blocks as in a shopping center or commercial strip, we recorded the block location of each institution and calculated an index of institutional concentration. This index is the sum of the absolute difference between the proportional distribution of blocks and facilities in each tract divided by two. Thus a tract with all of its institutions located on two of its 100 blocks would have an index score of .98. By contrast, a similar tract with institutions scattered on 50 blocks received a score of .50. The index reflects, in part, the ratio of institutions to blocks in each tract. The correlation of $-.347$ between the number of institutions per capita and the index of institutional concentration indicates that census tracts with concentrations of facilities have relatively few of them.

These data were merged with information from the 1970 census. In addition to

the social and economic characteristics of the tract populations, the distance of each tract from the center of the city (city hall) and the distance from the nearest railroad were measured. These locational variables have been shown to have major effects on the location of commercial (McKenzie, 1933; Isard and Whitney, 1949) and industrial (Ericksen and Yancey, 1979b) activities, as well as the social and economic character of local populations. Age of the tracts was measured by the year in which 50% of the housing was completed. The measure of access to industrial employment is the number of manufacturing jobs within one mile of each tract in 1970. This latter is a modified version of the industrial work place potential developed by Duncan and Duncan (1960). Because of the highly skewed distribution of industrial concentrations, for this analysis this variable has been dichotomized at 5,000 industrial jobs. The measure of community stability used is the percent of the 1970 adult heads of households who had lived at the same address since 1949.

FINDINGS

Antecedents of institutional development. In Table 1 we have presented the standardized regression coefficients (beta weights) obtained between variables measuring the ecological character of the tracts and the socioeconomic character of local populations, and the number of each of the 11 types of facilities, the number of gathering places, the total number of facilities and their concentration. The independent variables used are the size of the local population,² the age of housing in the tract, the distance from city hall, the proportion of workers driving to work, the proportion of the tract's population that

² We decided to use the number of facilities as the dependent variables and the size of population as an independent variable instead of defining the dependent variables to be facilities per capita for two reasons. One was that we wanted to avoid the problem of interpreting a correlation of two ratios with the same denominator. The second reason was that we were substantively interested in variations in the relationships between size of population and number of facilities.

Table 1. Regression Analyses of Institutional Location: Beta Weights of Variables Which Were Significant at the .05 Level

Institutional Type	Population Size	Distance to City Center	Median Age of Housing	Pct. Workforce in Manufacturing	Pct. Drive to Work	Pct. Black	R ²
Retail Stores	.630	—	—	—	—	-.342	.44
Small Groceries	.572	-.196	.308	.206	—	—	.79
Personal-Household Services	.585	.369	.378	—	-.266	-.218	.54
Professional Services	.521	.418	.331	-.261	-.545	-.560	.45
Clubs and Associations	.306	—	—	—	-.384	-.242	.24
Bars-Restaurants	.426	.211	.321	—	-.538	-.221	.67
Government Services	—	.443	—	—	-.456	-.471	.21
Institutional Churches	.422	—	.369	—	—	-.285	.23
Storefront Churches	.178	—	—	—	—	.531	.66
Schools	.228	—	—	—	—	—	.08
Nonlocal Institutions	—	.251	—	—	-.532	—	.06
Gathering Places	.525	—	.299	—	-.311	—	.70
Total Institutions	.630	.253	.334	—	-.331	-.314	.61
Concentration of Institutions	—	.176	-.279	—	.302	—	.65

NOTE: All independent variables except distance to center of city obtained from 1970 census. City center was defined as Philadelphia City Hall.

was black and foreign stock, the proportion of families with annual income more than three times the poverty level, and the proportion of workers employed in manufacturing. Two independent variables, the percent of families with annual incomes more than three times the poverty level, and the proportion of population that was foreign stock, were not significantly related to any of the institutional characteristics. Thus they were eliminated from the analysis.

As can be seen from column one of Table 1, the number of most specific types of facilities, the number of gathering places and the total number of facilities in the tracts are related to the size of the population. In short, the more people there are, the more facilities are found. There are two exceptions to this general rule. Extralocal facilities, which provide services to larger geographic areas, and government services are not correlated with population. The latter are more frequently found in areas that are distant from the center of the city, where there are few blacks, and where few workers drive to work, i.e., in suburban-satellite municipalities.

In addition to the size of local populations, other variables which were significantly related to the total number of facilities and services are the age of hous-

ing in the tract, the distance from city hall, the proportion of the population that was black, and the proportion of workers who drove to work. As expected, given the literature describing the institutional character of older neighborhoods (Warner, 1968), the more recently developed census tracts have fewer facilities and services. Yet, despite the correlation between age of housing and distance from the center of the city, we also find that the distance of the tract from the center of the city is positively related to the total number of facilities and services. This somewhat surprising result is consistent with the previous work of McKenzie (1933) and Isard and Whitney (1949) who found higher levels of retail activity in areas which were more distant from major commercial centers.

The association between the proportion of the work force engaged in manufacturing and the total number of facilities is not significant. This result, not consistent with our initial expectations, concerning the character of working-class neighborhoods, suggests that there may be a considerable number of manufacturing workers living in the new blue-collar suburbs as well as in the older industrial neighborhoods. The only facilities positively associated with manufacturing workers are small groceries. Professional services,

i.e., lawyers, banks, business services, etc., are negatively associated with manufacturing workers.

The effect of the means of transportation to work is second only to population size in determining the institutional character of neighborhoods. Neighborhoods with large proportions of workers who use an automobile to get to work have fewer facilities than those whose workers use mass transit or walk to their jobs. Churches, schools, small groceries, and retail stores are not related to automobile use.

Perhaps the most striking finding of this research is the strong and negative effect of blacks on the number of facilities and services found in urban neighborhoods. This finding is consistent with the research of Aldrich and Reiss (1976) who showed that previously established businesses and services abandon areas which are invaded by blacks. Store front churches are the only local facility positively associated with high proportions of blacks.

We find that three variables, the distance from the center of the city, the age of housing, and the percent of the workers who drive to work are significantly related to the degree to which facilities are clustered in relatively few blocks in a given tract. The clear and unsurprising conclusion is that facilities located in new automobile suburbs are concentrated in commercial and service centers. Census tracts closer to the center of the city, and older ones in outlying industrial areas, i.e., those which were built before the widespread use of the automobile, are most likely to be characterized by the physical dispersion of facilities and residences.

Local institutions and residential stability. We now turn to the question of whether the presence of local facilities promotes community stability, or at least retards residential turnover. We see from the zero-order correlations in Table 4 that the relationship between institutional structure and population stability are in the expected direction and statistically significant in eight of the 14 tests and are in the expected direction 12 times. The relationship is particularly strong for retail stores, small groceries, bars and restaur-

ants and institutionalized churches. The relationships between stability and clubs and associations, professional services, storefront churches and schools are not significant. The number of extralocal institutions is negatively related to stability. Despite the weak association in several specific cases, the relationships between the total number of institutions, the number of gathering places, and the index of institutional concentration, indicate that neighborhoods with a large number of local institutions and those with institutions distributed across the tracts are more stable.

In order to test whether the relationship between the structure of local facilities and stability is spurious, we used the predictors of local facilities, along with predictors of stability in a multivariate analysis. Of specific concern is the possibility that institutional structure and stability may have common structural antecedents. Three regression analyses have been done. First, we have examined the contribution of a series of ecological, economic and social factors on the stability of neighborhoods. The structure of local facilities was omitted here. The independent variables included were: the age of housing in the tract, the distance from the center of the city and from the nearest railroad, the number of manufacturing jobs within one mile of the center of the tract, the proportion of workers employed in manufacturing, the percent using the automobile to get to work, the percent of family incomes over three times the poverty level, percent of housing which was owner-occupied, and the value of owner-occupied housing. In order to assess the effect of the structural and socioeconomic variables, independent of the age of the population, the proportion of the population over 65 years old was included as a control variable.

The second analysis focused upon the question of the contribution of local institutional development to the stability of the communities. We added our measures of local facilities to the equations predicting stability.

The third analysis examined the location of the black population in the city. In much of the literature on urban commu-

nity problems, the decline and instability of neighborhoods is used synonymously with the presence or potential presence of blacks. Previous research has indicated that the presence of industrial jobs and consequent presence of large numbers of manufacturing workers increased the residential stability of urban neighborhoods. The black population of Philadelphia has more than doubled in the last 30 years. Given this, coupled with the 125-year history of exclusion of blacks from industrial employment in the city (Erickson and Yancey, 1979a), we expected that the structural factors which were positively related to the stability of neighborhoods would have a direct and negative effect on the residential location of blacks.

The results of these analyses are presented in Tables 2 and 3. As can be seen, the residential stability of neighborhoods is a function of the age of housing in neighborhoods, the distance from railroads, the percent of the work force employed in manufacturing, the proportion of owner-occupied housing, and the age of the population. Other variables included in the analysis—the level of industrial employment nearby, the distance from the center of the city, the median value of housing, level of family income, and means of transportation to work—were not significantly related to stability.

Despite the traditional emphasis on the age of housing as a predecessor to their deterioration, decline, and subsequent instability, we find that the age of the census tracts is positively related to stability.

Even when the age of the population is controlled for, older neighborhoods are more stable than younger neighborhoods. Although the level of industrial employment was not directly related to stability, we find that two variables which are correlated with industrial location, railroad distance and manufacturing workers, are.

In the second series of regressions we added the number of each type of facility, the number of gathering places and total number of facilities per capita, and the index of institutional concentration to the equation predicting residential stability. Separate regressions were run for each institutional measure. We computed 14 separate equations, one for each type of facility, one for gathering places, one for all facilities and one for the index of institutional concentration. In Table 4 we have presented the standardized regression coefficients (beta weights) and percent increase in explained variance resulting from the inclusion of each of these variables. The results indicate that only two institutional variables are significantly related to residential stability—retail stores (the relationship is positive) and storefront churches (it is negative). All previously significant variables remain statistically significant. The overwhelming pattern obtained indicates that there is little or no association between the stability of local populations and the institutional character of neighborhoods, once their historical, economic and ecological character is taken into account.

The exceptions of retail stores and storefront churches may lead to the in-

Table 2. Correlation Analysis of Residential Stability and Location of Black Population

Variables			Correlations						
	\bar{X}	s.d.	y_2	x_1	x_2	x_3	x_4	x_5	x_6
y_1 = percent stable 1949–1970 ¹	17.0	11.3	.004	.615	-.439	.265	.251	.079	.438
y_2 = percent black 1970	18.9	31.7		.563	.049	.218	-.110	-.343	-.028
x_1 = median age of housing	37.6	23.3			-.337	.543	.220	-.347	.368
x_2 = distance to railroad	4.5	4.1				-.218	-.202	.240	-.297
x_3 = industrial job access ²	.15	.35					.194	-.311	.086
x_4 = percent manufacturing workers	31.1	9.4						.086	-.289
x_5 = percent owner-occupied housing	65.7	21.9							-.380
x_6 = percent 65 years and older	10.4	5.0							

¹ This is the proportion of household heads who moved to their 1970 residence before 1950.

² Industrial job access is the number of industrial jobs within one mile of the census tract. Recoded value of 0 if fewer than 5,000 jobs, and 1 if 5,000 or more jobs.

Table 3. Regression Analysis of Residential Stability and Location of Black Population

Independent Variables							
Dependent Variables (Intercepts)	Median Age of Housing	Distance to Railroad	Industrial Job Access	Unstandardized Regression Coefficients (Standardized Regression Coefficients)			R ²
				Percent Manufacturing Workers	Percent Owner Occupied Housing	Percent 65 Years and Older	
(1) Percent Stable 1950-1970 (-.198)	.246* (.509)	-.609** (-.219)		.209* (.172)	.231** (.448)	.833** (.405)	.666
(2) Percent Black 1970 (64.5)	1.067** (.782)	1.24* (.150)		-1.23** (-.364)	-.375** (-.258)	-2.72** (-.473)	.591
(3) Percent Black 1970 (78.98)	1.19** (.877)		-19.66* (-.221)	-1.35** (-.397)	-.41** (-.284)	-3.21** (-.556)	.603

Note: see Table 2 for variable definitions.

* Significant at .05 level.

** Significant at .01 level.

terpretation that these institutions, unlike all others, have an independent effect on residential stability. We disagree. These statistical associations are the results of structural and ecological factors which affect the stability of neighborhoods, their racial composition, and their institutional character. Older neighborhoods which lack the structural basis for residential stability have been abandoned by whites and subsequently invaded by blacks. Aldrich and Reiss (1976) have shown that in such neighborhoods white-owned retail shops are closed. We have seen similarly in Table 1 that black neighborhoods

have fewer retail stores and more storefront churches.

With the final two equations in Table 3 we examined the relationship between factors related to the residential stability of neighborhoods and the location of blacks in the city. One uses the basic model predicting the stability of neighborhoods to predict the location of blacks. In the second we have added the number of industrial jobs, a primary theoretical variable which was not significantly related to stability, to the equation. The general hypothesis was that those structural factors which were positively related to the stabil-

Table 4. Contribution of Local Facilities and Services to Residential Stability

Institutional Types ¹	Zero-Order Correlation	Beta Weight with Stability ²	R ² Change ³
Retail Stores	.316*	.147*	.019
Small Groceries	.546*	.123	.005
Personal-Household Service	.313*	.122	.012
Professional Service	.084	-.079	.011
Clubs and Associations	-.033	-.055	.003
Bars-Restaurants	.307*	.001	.000
Government Services	.082	.007	.000
Institutional Churches	.293*	.088	.007
Storefront Churches	.081	-.173*	.016
Schools	.040	.013	.000
Nonlocal Institutions	-.118	.026	.001
Gathering Places	.315*	.007	.000
Total Institutions	.298*	.060	.002
Concentration of Institutions	-.485*	-.076	.002

* Significant at .05 level.

¹ The variables are as defined in Table 1, divided by census tract population.

² Fourteen equations were computed, successively adding the facilities per capita variables to equation (1), Table 3. All variables which were significant in equation (1) were also significant when the facilities per capita variables were added.

³ This is the increase over R² = .666 given in equation (1), Table 3.

ity of neighborhoods would be negatively related to the presence of blacks. The results obtained from these analyses indicate that this is the case with one notable exception. The age of housing is not only related to stability, but is also the single best predictor of the location of blacks in the city. The relationship is positive in both cases. The second equation shows that access to industrial employment is negatively related to the presence of blacks. Including industrial access resulted in reducing the effects of railroad distance below statistical significance. Neighborhoods which have become dominated by blacks are the older and abandoned industrial areas and streetcar suburbs, rather than the stable industrial urban villages or new automobile suburbs. In more general terms, these results confirm the observation made by Schnore (1964:336) that "the 'marginal work force' may be physically marginal to a given industrial community."

SUMMARY AND CONCLUSIONS

There are some obvious limitations to this research. There is no measure of the size or level of institutional activity. A small corner grocery has been equated with a large suburban supermarket. The weak association between the level of income and the number of institutions found in this study contrasts sharply with the previous work of Hawley (1941) and Cuzort (1955) who reported income levels associated with the level of institutional activity. This difference may be due to the lack of information on institutional magnitudes in the present instance.

However the results conform to Hawley's (1941:630) statement that "the way in which a population lives is reflected in the institutions which serve it." Previous research (Foley, 1950; Fried, 1963; Gans, 1962) indicates that working- and lower-class populations depend on local institutions. Stable working-class communities have the highest levels of institutional integration, the largest number of local institutions and the largest number of gathering places. The institutional structure of these neighborhoods reflects the

life styles of their populations, in particular high levels of interdependence between nearby friends and relatives. By contrast, the sparse institutional structure of the newer suburbs and concentration of institutions in shopping centers reflects a more mobile, cosmopolitan life style (Berger, 1960; Gans, 1967).

The relative absence of facilities and services in black neighborhoods remains even after controlling for factors which were assumed to account for differences in the institutional completeness of black and white communities. Blacks, with fewer local facilities, are dependent on public transportation for many services. This suggests an additional dimension to the reality of racial discrimination in American cities.

Perhaps the most surprising result concerns the relationship between local institutions and residential stability. Zero-order relationships between the number and integration of facilities in local communities and their residential stability disappear when other structural variables are controlled. Critical to the understanding of the stability of urban neighborhoods appears to be their economic character—particularly the location of industry, and the characteristics which are associated with industrial workers and their communities. Blacks in Philadelphia are concentrated in the oldest areas of the city. This finding taken alone may be interpreted in terms of the traditional argument of the "natural cycle" of neighborhood growth and decline. Yet we find that there are important exceptions to this general rule. Neighborhoods which are near railroads, have access to large numbers of industrial jobs, and are characterized by high proportions of industrial workers and homeowners, remain stable despite their age. It is the nonindustrial areas which are most vulnerable to abandonment and subsequent invasion by blacks.

In recent years several authors have documented the decline of local community autonomy (Vidich and Bensman, 1958; Warren, 1963). Not only are individuals more mobile, but decision making is more centralized and institutions more interdependent. As Warren (1966:vi) has written:

The strengthening ties of community units to extra-community systems orients them in important and clearly definable ways toward larger systems outside the community, making the model of a somewhat delineated, relatively independent and self-sufficient community less and less relevant to the modern scene.

Although the degree to which these local institutions are controlled by external systems is not known, results of this analysis have direct implications for Warren's discussion and the recent debates concerning the loss of community in urban areas (Luloff and Wilkinson, 1977; Hunter, 1977). If we take the presence and distributions of facilities as an indication of a community's *internal* structure and the place of the community in the city's economic structure (particularly its access to industrial employment) as an indication of *external* institutional linkages, the implications are clear. The latter are of primary importance in determining the internal structure, i.e., the social and economic character of local populations, the type and number of local institutions, and the degree to which a community is residentially stable. Paradoxically, communities having specialized and direct links to the larger industrial economy are characterized by the highest levels of stability and internal cohesion.

REFERENCES

- Aldrich, Howard and Albert J. Reiss, Jr.
1976 "Continuities in the study of ecological succession: changes in the race composition of neighborhoods and their businesses." *American Journal of Sociology* 81:846-66.
- Axelrod, Morris
1956 "Urban structure and social participation." *American Sociological Review* 21:14-8.
- Berger, Bennett M.
1960 *Working Class Suburb*. Berkeley and Los Angeles: University of California Press.
- Breton, Raymond
1964 "Institutional completeness of ethnic communities and the personal relations of immigrants." *American Journal of Sociology* 70:193-205.
- Cuzzort, Raymond P.
1955 *Suburbanization of Service Industries Within Standard Metropolitan Areas*. Oxford, OH: Scripps Foundation for Research in Population Problems.
- Duncan, Beverly and Otis Dudley Duncan
1960 "The measurement of intra-city locational and residential patterns." *Journal of Regional Science* 2:37-54.
- Duncan, Otis Dudley, and Beverly Duncan
1955 "Residential distribution and occupational stratification." *American Journal of Sociology* 60:493-503.
- Ericksen, Eugene and William L. Yancey
1979a "Immigrants and their opportunities: Philadelphia 1850-1936." Paper presented at the meeting of the American Association for the Advancement of Science, Houston.
1979b "Work and residence in industrial Philadelphia." *Journal of Urban History*. In press.
- Foley, Donald L.
1950 "The use of local facilities in a metropolis." *American Journal of Sociology* 56:238-46.
- Fried, Marc
1963 "Grieving for a lost home." Pp. 151-71 in Leonard J. Duhl (ed.), *The Urban Condition*. New York: Basic Books.
- Gans, Herbert J.
1962 *The Urban Villagers: Group and Class in the Life of Italian Americans*. New York: Free Press.
1967 *The Levittowners*. New York: Pantheon.
- Hawley, Amos
1941 "The ecological study of urban service institutions." *American Sociological Review* 6:629-39.
- Hunter, Albert
1975 "The loss of community: an empirical test through replication." *American Sociological Review* 40:537-52.
1977 "Reply to Luloff and Wilkinson." *American Sociological Review* 42:828-9.
- Isard, Walter and Vincent Whitney
1949 "Metropolitan site selection." *Social Forces* 27:263-9.
- Jacobs, Jane
1961 *The Death and Life of Great American Cities*. New York: Random House.
- Janowitz, Morris
1967 *The Community Press in an Urban Setting*. Chicago: University of Chicago Press.
- Kornblum, William
1974 *Blue-Collar Community*. Chicago: University of Chicago Press.
- Liebow, Elliot
1967 *Tally's Corner*. Boston: Little, Brown.
- Litwak, Eugene
1961 "Voluntary associations and neighborhood cohesion." *American Sociological Review* 36:258-71.
- Luloff, A. E. and K. P. Wilkinson
1977 "Is community alive and well in the inner city?" *American Sociological Review* 42:827-8.
- McKenzie, R. D.
1933 *The Metropolitan Community*. New York: McGraw-Hill.
- Molotch, Harvey
1972 *Managed Integration: Dilemmas of Doing Good in the City*. Berkeley: University of California Press.

- Nelli, Humbert S.
1970 *Italians in Chicago*. New York: Oxford University Press.
- Pratt, E. E.
1917 *Industrial Causes of Congestion of Population in New York*. New York: Columbia University Press.
- Rossi, Peter
1955 *Why Families Move*. New York: Free Press.
- Schnore, Leo F.
1964 *The Urban Scene*. New York: Free Press.
- Smith, Richard A.
1975 "Measuring neighborhood cohesion: a review and some suggestions." *Human Ecology* 3:143-60.
- Stack, Carol B.
1974 *All Our Kin*. New York: Harper and Row.
- Vidich, Arthur J. and Joseph Bensman
1958 *Small Town in Mass Society*. Princeton: Princeton University Press.
- Warner, Sam Bass
1968 *The Private City: Philadelphia in Three Periods of Growth*. Philadelphia: University of Pennsylvania Press.
- Warren, Roland L.
1963 *The Community in America*. Chicago: Rand McNally.
1966 *Perspectives on the American Community*. Chicago: Rand McNally.
- Young, Michael and Peter Willmott
1957 *Family and Kinship in East London*. London: Routledge and Kegan Paul.

RACE, REGIONAL LABOR MARKETS AND EARNINGS*

TOBY L. PARCEL

University of Iowa

American Sociological Review 1979, Vol. 44 (April):262-279

Despite continued interest in racial inequality, studies which effectively integrate structural and socialization/investment explanations of racial differences remain rare. In this paper arguments are presented for using contextual analysis to study individual labor earnings as a function of both background/investment variables and specific dimensions of areal labor market social and economic organization. Analysis from samples of workers (821 whites, 375 blacks) suggests that, in the presence of numerous controls (1) black earnings levels are hindered by racial competition and residential segregation, and facilitated by export sector productivity; and (2) white earnings levels also are hindered by residential segregation, but facilitated by racial competition and export sector productivity. Implications of these findings are explored with regression standardization which suggests that policy seeking to promote racial economic equality must recognize that changes in the racial distribution of resources would *not* occur independently of changes in the rates of return to resources.

Continued interest in explanations of racial differences in economic outcomes (Farley, 1977; Featherman and Hauser,

1976b; Kluegel, 1978) is prompted both by continued gaps between racial groups in socioeconomic status as well as by theoretical developments in the field of stratification itself. In particular, recent arguments concerning the importance of labor markets as determinants of socioeconomic status (Hanushek, 1973; Stolzenberg, 1975; Althausen and Kalleberg, 1977; Spilerman, 1977) reflect renewed interest in structural explanations of inequality. Congruent with this emphasis, in this paper I direct attention towards a relatively neglected structural determinant of individual labor market earnings: the regional labor market in which a worker is employed. In order to develop an appropriately specified model of earnings attainment for blacks and whites, I argue that integration of the two major traditions

* Address all communications to: Toby L. Parcel; Department of Sociology; University of Iowa: Iowa City, IA 52242.

Preparation of this paper was supported in part by Grant #MPRC 91-53-76-24, Employment and Training Administration, Department of Labor, and by Grants #67-0493 and #67-0653 from the National Institute of Mental Health. The survey data were provided by the Michigan Survey Research Center. Neither the granting agencies nor the Survey Research Center bear any responsibility for the opinions expressed herein. Samuel H. Preston and Hubert M. Blalock, Jr. provided helpful comments on an earlier draft. Charles W. Mueller and two anonymous referees provided additional helpful comments. Thanks are due to Alan T. Richards, Marie Baker-Lee and Debra K. Shaffer for computer programming, clerical and computational assistance, respectively. The remaining errors are my own.

which previously have been utilized to study racial inequality is theoretically advisable and empirically feasible.

PREVIOUS STRATEGIES AND SUGGESTED SYNTHESIS

Sociologists and economists interested in racial inequality have employed one of two types of models. Studies of individual black-white economic differences which fall within the rubric of the status attainment tradition (Duncan, 1968; 1969; Coleman et al., 1972a; Blum, 1972; Siegel, 1965) direct attention to factors such as family background, years of education and occupational status or prestige as determinants of earnings. These studies suggest that both lack of access to key resources (e.g., education, family background) as well as racial differences in rates of return to these resources contribute to racial economic status differences. Research within the human capital tradition similarly emphasizes the importance of individual investments such as education, migration and job experience as earnings determinants (Weiss and Williamson, 1972; Blinder, 1973; Weiss, 1970; see Mincer, 1970, and Blaug, 1976, for general reviews). Illustrating the second approach is ecological research analyzing structural determinants of black-white ratios in economic status, or of minority status itself. Analyses of occupational competition/segregation (Snyder and Hudis, 1976; Szymanski, 1976) and areal determinants of economic outcomes (Master, 1975; Spilerman and Miller, 1976) are cases in point.

Although these traditions emphasize socialization or structural explanations of achievement, their mutual focus on inequality provides commonality. One is surprised to find, then, that studies which integrate elements from each tradition have been rare. The advantages of such integration would seem obvious. It is clear that both socialization/investment and social structure will influence individual socioeconomic status; only with an effective empirical integration can we assess the extent to which each type of explanation is useful. Considerations of par-

simony also are served if such an integration can be accomplished.

Empirical problems, however, seem to have prevented development of models which incorporate good indicators of both structural and socialization explanations of attainment. For example, analyses by Harrison (1972) and Wachtel and Betsey (1972) incorporate dummy variables representing SMSA and industry affiliation (Harrison) and area, industry and job (Wachtel and Betsey) into wage attainment models; they evaluate the relative importance of these "structural" variables over human capital variables (education, health, etc.) in predicting earnings. Kalachek and Raines (1976) adopt a similar strategy.

Harrison and Wachtel and Betsey cite dual labor market theory as the basis for their empirical work, yet the reader is left wondering whether this theory actually has been tested. When Harrison reports that industrial affiliation and area "make a difference" in earnings attainment, we remain uncertain as to what *specific dimensions* behind these categories actually contribute to the observed effects. In terms of evaluating structural explanations for achievement, these types of findings are less intellectually satisfying than those produced by ecological analyses which actually incorporate specific dimensions of social organization suggested by theory (Jobu and Marshall, 1971; Spilerman and Miller, 1976; Masters, 1975). These ecological studies, however, evidence a complementary deficiency. While inclusion of indicators of concepts theoretically operative at an aggregate level is facilitated due to usage of an ecological unit of analysis, measurement of individual-level characteristics and processes necessarily suffers. This defect is a particularly serious one given that both the human capital and status attainment literatures provide clear evidence that individual investments and socialization experiences importantly affect economic outcomes. By definition, ecological analyses only indirectly can measure these concepts, and hence run the risk of generating estimates of "returns" to structural factors which are biased.

The solution to these problems which I

utilize in this analysis represents an attempt to incorporate the advantages of each of these types of approaches while avoiding their respective disadvantages. The models I estimate are contextual models which retain the individual as the unit of analysis while incorporating independent variables from both the individual and the ecological levels of analysis. The dependent variable is labor earnings of individual workers; independent variables reflecting investments in human capital and socialization factors are measured at the individual level. Variables incorporated to tap variation due to labor market conditions are interval-level measures of characteristics specific to the areas in which workers reside. Such a strategy has the advantage of measuring variables at the level of aggregation at which the constructs are theoretically operative, thus maximizing their potential explanatory power. Each "type" of variable thus serves as a well-measured control for the other. This strategy avoids weaknesses evident in analyses of racial inequality derived from the status attainment perspective which omit indicators of social structure and therefore must indirectly infer their operation; it also avoids the pitfalls of ecological analyses which measure individual investments such as education at an aggregate level (e.g., Masters, 1975) and which are forced to omit other relevant indicators of socialization experiences altogether due to measurement problems. In addition, it represents an improvement over studies which note associations between individual outcomes and dummy variables representing categorical membership. More specifically, given that others have demonstrated that areal affiliation "makes a difference" in earnings attainment (e.g., Harrison, 1972; Wachtel and Betsey, 1972), this analysis seeks to explain *why* such findings exist.¹

In order to delimit the analysis, I have chosen to focus upon areal labor market characteristics as the structural variables

of interest. Several reasons suggest that this focus is a needed one. First, areal variation in the relative economic status of blacks and whites raises questions concerning the areal characteristics which may be responsible for this variation. Second, as I will indicate below, there are several well-developed literatures which argue for the importance of regional influences on status attainment, and thus provide a basis for model specification. Third the study of regional labor markets may be viewed as a necessary complement to recent analysis of occupational labor markets (Stolzenberg, 1975; Althausser and Kalleberg, 1977; Spilerman, 1977). Given theoretical arguments concerning the interrelationships among occupational, areal and industrial markets functionings (Thompson, 1965; Spilerman, 1977; Althausser and Kalleberg, 1977; Harrison, 1972; Lane, 1972), analysis of each type of labor market in isolation from the rest prepares the foundation for theoretical and empirical integration.

Estimation of contextual models requires a developed theoretical framework. Deliberate avoidance of dummy variables representing areal labor markets in favor of a strategy attempting to ascertain why location of employment is important demands a theory to that effect. Below I argue that characteristics of both the social and economic organization of areal labor markets influence earnings attainment of blacks and whites.

THEORETICAL CONSIDERATIONS

The basis for arguments concerning the impact of areal *economic organization* upon individual earnings is presented by Thompson (1965) in *A Preface to Urban Economics*. His theory of urban economic functioning takes as its premise the operation of a local labor market which affects local income distribution via economic activity in the export base. He argues that an urban area is not unlike a small industrially-oriented nation which must export products to survive economically. Thus, he argues for usage of the urban area (SMSA) as the unit of analysis; it is seen as a potentially viable economic unit which devotes as much as one-half of its

¹ Alexander and Eckland (1975) suggest that such categorical variables representing affiliation may mask offsetting tendencies in the operation of two or more variables associated with affiliation. Contextual analysis avoids this problem.

economic activity to the production of goods for export. Economic activity within the export sector influences the areal economic welfare. In particular, wages in the dominant export sector will influence wages for other jobs in that labor market, i.e., an "intraarea wage roll out" effect will occur. This reasoning assumes that the local labor market is autonomous, and that migration between labor markets is sluggish. From this hypothesis it follows that the local service sector must offer wages which are at least partially competitive with the dominant export sector industries, or they will face problems in recruiting workers. Thus, a high-wage export industry directly enriches its own workers by paying them high wages, and indirectly enriches other workers by raising wages in the local service sector through intraarea competition (Thompson, 1965:73).

Thompson also argues that a strong export sector should contribute to reduced income inequality through several mechanisms. First, a strong export sector is composed primarily of core as opposed to peripheral firms;² hence unionization will be extensive and promote earnings equality among these workers. Second, predominance of manufacturing activity constricts the skill range of occupations relative to what would obtain in a diversified economy. In manufacturing most available jobs are those in mass production while more diversified economies demand higher proportions of both high and low skill jobs in a variety of service industries. Third, strong export sectors are generally composed of firms owned by individuals who live outside that export sector, particularly in big cities. Hence income from property plays a minor role as a source of income to community residents since industrial profits go elsewhere. We note, however, that his evidence concerning the impact of the export sector upon racial economic inequality is largely indirect.

While a complete test of Thompson's ideas is beyond the scope of this analysis, one of his central hypotheses is that wage

levels in the export sector will influence wage levels throughout the labor market. In this analysis I suggest that manufacturing wage levels in an areal labor market will affect individual earnings levels of blacks and whites, independent of investments such as education or job experience. Hence areal manufacturing wage levels will be used as an indicator of labor market productivity which affects workers' wages. Additional analyses by Franklin (1968), Reder (1955), Turner (1951) and Masters (1975) provide supporting theoretical rationale and evidence for such a conceptualization.

Additional analyses suggest that areal labor market *social organization* should influence workers' economic standing. Several researchers have investigated the relationship between residential segregation and racial income inequality, but findings remain contradictory. Masters (1975) presents evidence which suggests that residential segregation is not associated with black-white earnings ratios net of racial ratios of years of education, areal unemployment rates, and indicators of industrial structure for 77 large SMSAs in 1970. Analyses by Kain and Persky (1969), Mooney (1969) and Kain (1968), however, argue that residential segregation limits blacks' employment opportunities. They argue that residential segregation is pervasive, and there are employment opportunities which blacks miss because the sheer size of metropolitan areas constitutes an obstacle both to acquiring information concerning jobs and to reaching places of employment once jobs have been secured. The trend towards "suburbanization" of employment has removed and will continue to remove jobs from the central cities where the majority of blacks live, thus exacerbating the problem. In terms of policy implications, these findings suggest that eliminating residential segregation is a key step to improving black employment opportunities and thus economic status.

Due to the presence of conflicting findings in this field, I will include a measure of this construct in the analysis. The literature is explicit in suggesting that residential segregation should negatively affect black economic status. To the extent that

² Thompson does not phrase his arguments in dualist terms, but these labels provide an accurate reflection of his ideas.

whites benefit from exclusion of blacks from employment opportunities, we would expect the partial slope of earnings regressed on residential segregation to be positive for whites.

A second dimension of labor market social organization which has received theoretical and empirical attention is that of racial competition for economic opportunities. Most of the analysis has focused upon the explication of the negative correlation between the percent of nonwhites or women and income level within an occupation as a function of occupational competition and/or occupational segregation (Hodge and Hodge, 1965; Taeuber et al., 1966; Snyder and Hudis, 1976; Szymanski, 1976). Theoretical works by Blalock (1967), Thompson (1965) and recent empirical analysis by Spilerman and Miller (1976) suggest that a similar conceptualization can be made for geographical units. Blalock argues that nonlinear increases in minority concentration can lead to economic discrimination by whites due to their perception of black threats to white levels of resources. I incorporate an indicator of racial competition in the analysis; I predict that high levels of black concentration will be negatively associated with black earnings, independent of the remaining determinants. The prediction concerning the influence of such levels of minority concentration among whites is more ambiguous. While Blalock's analysis would suggest that whites benefit from the economic discrimination against blacks, empirical analyses addressed to this question have provided mixed findings (Glenn, 1963; 1965; Bergmann, 1971; Szymanski, 1976; Snyder and Hudis, 1976). The bulk of the findings from previous analyses of occupations suggest that white gains from black poverty may be minimal; however, evidence from Spilerman and Miller's recent analysis of geographical areas indicates that whites may benefit economically from racial competition in a labor market. A positive coefficient among whites would suggest that whites economically benefit from black concentration in areal labor markets, while a negative coefficient would indicate that

whites suffer economically from such concentration.

METHOD

A sample of respondents from the 1972 Michigan Panel Study of Income Dynamics (PSOID) (Survey Research Center, 1972) was utilized in the analysis. Included are all black and white males aged 35-54 whose areas of current and former residence could be identified, who were not employed in the armed forces in 1972, and who reported earnings for 1971. The age range of the sample was limited to a 20-year cohort in the "prime" of their working years to eliminate cohort effects as noted by Price (1969) and Lieberman (1973). Application of these criteria yielded samples of 375 blacks and 821 whites.

Measures of individual-level characteristics were taken directly from the PSOID data file and included as indicated below. Ecological characteristics representing the social and economic organization of areal labor markets were produced from several sources as outlined below and attached to individual cases according to the following criteria. Respondents' areas of current residence were identified by utilizing respondents' answers concerning the states and counties of current residence. If the county of current residence was part of an SMSA in 1972 according to the 1972 Census of Manufacturers, I classified the respondents as living and working in that SMSA, assumed that contextual variables at that level of aggregation would be theoretically causative, and measured the ecological characteristics on the basis of that classification. If the county was not part of an SMSA, I assumed that the county was the theoretically causative aggregative unit, and measured the ecological variables on the basis of the county. Thus the ecological variables describing the current area of residence are measured on the basis of the SMSA or the county, depending upon the respondents' current county of residence. Ninety-nine SMSAs and 87 counties are represented in the samples.

Variables incorporated in the analyses

include (1) individual-level indicators of investment in earnings potential and of socialization experiences; (2) aggregate measures of areal labor market economic and social organization; (3) additional control variables representing socialization experiences not directly tapped by the remaining indicators.

Dependent Variable

Earnings. Respondents' 1971 total labor earnings include earnings when employed by others, income from self-employment, and other income derived from respondents' own labors. The earnings measure was deflated according to an interarea wage deflation factor for 1972 produced by the U.S. Bureau of Labor Statistics (1973) in order to control for variations in the cost of living across regions.

Independent Variables

Individual-level variables. *Occupational prestige* was measured by Siegel's (1971) prestige sources for major occupational groups (e.g., professional, managers, craftsmen and foremen) which were provided on the PSOID files. *Education* was coded in dummy variables to reduce specification error due to the nonlinear relationship between education and earnings. The breaking points utilized to create the dummy variables for both education and weeks worked are taken from Weiss and Williamson (1972), and reflect delineations of portions of the respective functions which are expected to be approximately constant on the basis of theory. For example, while the relationship between nine to eleven years of education and earnings is expected to be approximately constant, an increment in earnings due to high school graduation is expected and hence that period of attainment is dummied separately. Such a strategy is designed to maximize the variation in earnings explained by education. The categories are: 6–8 years, one, zero otherwise; 9–11 years; 12 years; 12 years plus other training or some college; college graduate; college graduate plus graduate degree or graduate work.

Weeks worked was similarly coded in dummy variables: 14–26 weeks, one, zero otherwise; 27–39 weeks; 40–47 weeks; 48–49 weeks; 50–52 weeks. *Experience in the labor force* is estimated by subtracting years of schooling attained plus seven from age; thus following Mincer (1974) and others, we assume that labor force experience begins when schooling ends and experience should be positively related to earnings.

Migrant is a dummy variable coded one if the respondent currently resides in a state different from that in which he grew up. This variable is included as a control for social selection which may pose a threat to the internal validity of contextual analyses (Hauser, 1974). *Health limiting work* is a dummy variable coded one if the respondent reports a health impairment which limits either the type or duration of work he can perform, zero otherwise. Following human capital analyses which regard workers' investments in health as investments in earnings potential, I include this variable as a control; it is expected to be negative in sign.

Ecological variables. *Wages per man hour* is the ratio of the wage bill in the manufacturing sector to the number of man hours worked in that sector. This measure was produced from the 1970 Census of Manufacturers Area Series (U.S. Bureau of the Census, 1975) according to the labor market of current residence. It is included as an indicator of export sector productivity, and, following Thompson's (1965) arguments concerning export sector wage levels affecting urban wages generally, is expected to be positive in sign. *Unemployment rate* was produced from the U.S. Bureau of the Census (1975) according to the labor market of current residence and incorporated as a control variable, an additional indicator of labor market productivity; it is expected to be negatively associated with earnings. *Percent black* was included as the indicator of racial competition. It was produced from the 1970 Census of Population and calculated as the ratio of the number of black to the total population in the labor market following Blalock (1967). I used the natural log of this ratio to correct for no

Table 1. Means (or Category Percentages) and Standard Deviations of Variables Utilized in Analysis

Variable	Whites		Blacks	
	\bar{X} or %	S	\bar{X} or %	S
Deflated Earnings, 1971 (in dollars)	\$12,432	(7198)	\$7,904	(4436)
Years of Education: 0-5 yr.	2.95%		18.8%	
6-8 yr.	12.9%	(33.5)	20.6%	(40.5)
9-11 yr.	16.8%	(37.4)	32.5%	(46.9)
12 yr.	20.4%	(40.3)	11.9%	(32.4)
12 yr. and training or some college	26.2%	(44.0)	13.0%	(33.6)
College Graduate	12.9%	(33.5)	.40%	(6.14)
College Graduate and added schooling or higher degree	7.87%	(26.9)	2.3%	(16.7)
Years of Education (interval scale)	12.2	(3.57)	9.03	(3.93)
Weeks Worked, 1971: 0-13	2.76%		9.91%	
14-26	1.93%	(13.8)	2.50%	(15.63)
27-39	5.82%	(23.4)	8.23%	(27.5)
40-47	18.5%	(38.9)	22.3%	(41.7)
48-49	32.5%	(46.8)	21.9%	(41.4)
50-52	38.5%	(48.7)	35.2%	(47.8)
Weeks Worked (interval scale)	46.23	(8.91)	42.96	(13.64)
Occupational Prestige	41.8	(13.4)	28.9	(12.4)
Work Experience (in years)	25.2	(6.77)	28.0	(7.73)
Health Limits Wk.	8.65	(28.1)	13.8	(34.5)
Unemployment Rate	3.87	(1.53)	3.43	(1.23)
Wage per Man Hour (in dollars)	3.98	(.79)	3.81	(.85)
Segregation Index	84.7	(6.26)	87.7	(5.40)
Lifetime Migrant	29.7%	(45.7)	46.4%	(49.9)
Percentage Black (natural logarithm)	1.53	(1.56)	2.88	(.681)
Work Motivation	9.22	(2.63)	9.07	(2.76)
Mental Ability	10.22	(1.80)	8.42	(2.49)
Father's Education	8.01	(3.48)	5.80	(3.30)
	(N=821)		(N=375)	

linearity. It is expected to be negatively associated with earnings for blacks, but potentially positively associated with earnings for whites. *Segregation index* was included as the indicator of residential segregation. It was produced by Sorensen et al. (1974) and attached to 65% of the black cases and 45% of the white. Thus although there was a substantial proportion of missing cases for this construct, due to its theoretical importance it was included in the analysis. Care will be taken to evaluate its statistical significance by using appropriately reduced N's in the tests. Signs of the coefficients are predicted to be negative for blacks and potentially positive for whites.³

Additional control variables. In a sec-

³ These contextual measures are best viewed as global variables (Lazarsfeld and Menzel, 1969) which are reflective of emergent properties of aggregates. In no case will I include an analytic variable with its individual-level counterpart in the same equation since this strategy biases the findings in favor of the analytic variable, i.e., that with the lesser amount of measurement error (Hauser, 1974).

ond specification of the earnings function, I incorporate a number of additional control variables representative of socialization experiences and individual investments not tapped directly by the aforementioned indicators; they are all expected to be positively associated with earnings. *Father's education* is a scale of educational attainment constructed by coding the midpoints of the categories outlined above for the respondents' education, as follows: 0-5 years=3; 6-8 years=7; 9-11 years=10; 12 years=12; 13-15 years=14; college graduate=16; beyond college graduate=18. *Work motivation* was computed by summing respondents' scores on 16 questions asked by Michigan Survey Research Center specifically to tap work motivation. *Mental ability* was computed by summing respondents' scores on a 13-item sentence-completion test included in the 1972 SRC survey.

RESULTS AND DISCUSSION

Table 1 presents the means and standard deviations of the variables utilized in

this analysis for both the PSOID blacks and whites. Blacks evidence lower levels of earnings and occupational prestige than do whites, obtain lower levels of educational attainment than do whites and work fewer weeks per year. Blacks are more likely to be subject to health limitations than are whites, obtain lower scores on the mental ability and work motivation measures, and to have fathers with lower levels of educational attainment. Blacks are also more likely to be lifetime migrants.

We also are interested in ascertaining the level of ecological resources to which blacks and whites are exposed. Since the ratio of black to white residents varies by area, we expect to find some differences in the access to areal labor market resources by race. Concerning ecological characteristics, blacks are slightly more likely to live in residentially segregated areas, to live in areas which pay slightly lower manufacturing wages, and more likely to live in SMSAs or counties with high proportions of black residents.⁴ However, they also are located in areas which have slightly lower levels of unemployment.

Table 2 presents two specifications of an earnings function which are estimated using analysis of covariance. Equation 1 includes the education and weeks worked dummies, indicators of occupational prestige, work experience, health limitation, lifetime migration and the four ecological variables representing social and economic organization of the labor market of current residence. Deviations from the mean are presented in place of unstandardized regression coefficients for the education and weeks worked constructs.⁵ The findings suggest that while

most of the human capital variables are statistically significant and positive, the ecological variables also influence earnings for both blacks and whites. At the lower educational levels whites are more handicapped relative to the mean white educational attainment than are blacks relative to the mean black educational attainment. At the upper levels of educational attainment whites obtain somewhat higher returns to schooling than do blacks, provided one takes the respective mean levels of attainment into account. Concerning weeks worked, the pattern evident at the lower educational levels is repeated: whites are relatively more handicapped at these levels than are blacks. With the exception of the 48-49 weeks increment, however, this pattern is continued at the upper levels as well.

While the health limitation and experience coefficients evidence the appropriate signs, they are not statistically significant; the experience effects may be reduced due to the limited cohort which comprises the sample. Finding the occupational prestige coefficient significant for blacks but not for whites may be due to the substantial effects which education has among whites, thus reducing the role of occupational prestige in the earnings attainment process.⁶ Migration is significant for

blacks and whites addition of each of these sets of variables resulted in increments to explained variance significant at less than the .001 level.

⁶ Additional specifications of Equations 1 and 2 were estimated in which an interval measure of respondent's education, constructed in the same manner as father's education, was used instead of the set of dummies indicated in Table 2. Increment in R^2 tests (Cohen and Cohen, 1975) suggested that the specifications in Table 2 (hereafter, the "true" equations) for both races explained significantly more variance than the additional equations (hereafter, the "biased" equations): whites, Equation 1, $F = 11.30$, $p < .001$; Equation 2, $F = 9.84$, $p < .001$; blacks, Equation 1, $F = 4.36$, $p < .001$; Equation 2, $F = 3.27$, $p < .01$. These additional equations also evidenced returns to occupational prestige for whites which were statistically significant ($p < .001$), and greater in magnitude than those in Table 2. Analysis of biases in returns to occupational prestige (see fn. 10) suggested 65.32% bias in Equation 1 and 71.01% bias for Equation 2. Comparable figures among blacks are 34.66% and 29.24%, respectively. These findings suggest that ignoring the nonlinear relationship between education and earnings results in upwardly biased estimates of returns to occupational

⁴ Such a finding reflects the disproportionate distribution of blacks across areas. Heavy concentrations of blacks in given areas means that the average black is more likely to live there, and that the average white is not; hence mean level of percent black varies by race.

⁵ Following procedures discussed by Cohen and Cohen (1975), I present significance tests for each set of dummy variables as a group. Increment in R^2 tests were performed to assess whether addition of the (1) education and (2) weeks worked variables resulted in a statistically significant increment in R^2 above a model which omitted these indicators. For both

neither race, which suggests that it is not the investment of migration as such which promotes individual economic advancement. In general, however, the appropriate signs and patterns of statistical significance associated with the terms representing individual investments suggest support for status attainment and human capital models.

Three of the four ecological variables are also significant as predicted. The failure of the unemployment indicator to attain significance may be due to the exclusion of respondents from the sample who reported no earnings in the year prior to the survey. The effect of wage per man hour is positive for both blacks and whites, and as a comparison of the unstandardized coefficients indicates, the returns among blacks exceed those among the whites. The opposing signs of the percentage black coefficients⁷ suggest that while a high proportion of blacks in a labor market hinders black earnings attainment, it may actually enhance the wages of white workers, possibly due to the occupational segregation effect mentioned above. Interestingly, both black and white earnings suffer due to residential segrega-

tion, although the effect is somewhat greater for blacks.⁸

Equation 2 presents an additional specification of the earnings function which includes indicators of past socialization experiences: mental ability, work motivation and father's education. Increment in R^2 tests indicate these variables add to explained variance ($p < .001$) for both blacks and whites. For neither race is the family background indicator, father's education, significantly associated with earnings. Work motivation is significant among whites, but not among blacks, thus suggesting that arguments concerning the importance of this factor in promoting minority economic success may be overstated. Notice, however, that for both races returns to mental ability are positive and statistically significant, and that returns among blacks are greater than among whites. Among both races, with the exception of the education and weeks worked constructs, mental ability is the most important individual-level determi-

prestige, particularly for whites. An alternative explanation also must be considered. Since occupational prestige is measured for job categories which are crude, it is possible that random measurement error prevents this variable from acting as an adequate control when used in the same equation as the educational dummies. However, this latter argument is only plausible to the extent that such measurement error is more severe for whites than for blacks.

⁷ The natural log form of percentage black is used in this analysis following Blalock's (1967) argument concerning the nonlinear relationship between minority concentration and discrimination. However, the logged and nonlogged forms of the variable are highly intercorrelated ($r = .870$ for blacks, $r = .813$ for whites) and alternative specifications of Equations 1 and 2 using the nonlogged form in place of the logged form result in no changes in substantive interpretations. Explained variance is comparable for blacks, and minimally increased for whites using the logged form; there are no major changes in statistical significance or magnitude of individual coefficients, although use of the logged form does result in small increments in returns to wage per man hour among blacks and modest decrements in returns to this variable for whites. Thus use of the unlogged form of this variable would suggest near comparable rates of return to export sector productivity by race, while use of the logged form suggests greater returns to blacks than to whites.

⁸ Statistical explanations for the negative coefficient among whites seem implausible. A reader has suggested that a strong correlation between percent black in and the segregation variable could result in the tipping of these regression coefficients. The zero-order correlations for both races are weak ($r = -.026$ among blacks, $r = .152$ among whites), and additional white specifications which included *either* the segregation *or* the racial competition variable provide no evidence for tipping since the signs reported in Table 2 are retained in the reduced specifications. Inclusion of both indicators increases explained variance for both races in both Equations 1 and 2 at less than the .001 level; we do note, however, that the magnitudes of the percent black and segregations coefficients increase when both are included in the specifications as compared with an equation which just contains either variable. Among blacks the increases run from 13.7 to 15.8%, while among whites the increments are in the 10-11% range for the racial competition variables and the 38.3-39.5% range for the segregation term. While these latter findings are compatible with the argument that there is an incipient tipping effect between these two variables among whites, it would not be appropriate to omit one variable from the model on the basis of these findings. In a further effort to explain the negative segregation term among whites, additional specifications were estimated in which other variables correlated with the segregation index were utilized in place of it; these models failed to yield interpretable results. The statistical significance of the segregation coefficients were assessed with appropriately reduced numbers of cases and the levels of significance reported were retained.

Table 2. Continued

Independent Variables	Equation 1			Equation 2		
	PSOID Whites		PSOID Blacks	PSOID Whites		PSOID Blacks
	Deviations from Mean	Standardized Coefficients	Deviations from Mean	Deviations from Mean	Standardized Coefficients	Deviations from Mean
	Unstandardized Coefficients		Unstandardized Coefficients	Unstandardized Coefficients		Unstandardized Coefficients
Occupational Prestige	23.88 (19.57)	.045	55.03** (17.33)	17.86 (19.51)	.033	46.30** (16.73)
Experience	38.71 (38.64)	.036	39.42 (33.59)	37.68 (38.51)	.035	18.84 (32.07)
Health Limits Wk.	-871.3 (746.7)	-.034	-975.0 (523.3)	-677.8 (744.0)	-.026	-745.4 (504.8)
Unemployment Rate	-158.6 (136.4)	-.034	-43.08 (141.7)	-143.6 (133.7)	-.031	-42.77 (134.9)
Wage per Man Hour	603.7* (275.4)	.066	1062*** (246.9)	581.4* (275.2)	.064	850.3*** (241.2)
Segregation Index	-111.5*** (33.84)	-.097	-135.3*** (34.24)	-108.7* (33.64)	-.094	-119.6*** (32.57)
Migrant	244.3 (459.9)	.016	-379.3 (408.4)	219.1 (456.9)	.014	-248.3 (395.7)
Percentage Black In Motivation	783.4*** (134.7)	.170	-1151*** (278.5)	743.6*** (134.5)	.161	-961.2*** (269.2)
Mental Ability				173.7* (83.52)	.063	73.85 (66.50)
Father's Education				349.1** (129.2)	.087	459.6*** (72.77)
Constant	9016 (R ² = .356; R ² = .340 (N = 821))		11129 (R ² = .533; R ² = .509 (N = 375))	23.17 (19.51)	.033	-3.11 (58.69)
				4470.3 (R ² = .367; R ² = .349 (N = 821))		6281.7 (R ² = .583; R ² = .558 (N = 375))

* = p < .05; ** = p < .01; *** = p < .001.

nant of labor earnings. Thus in contrast with Jencks et al. (1972), these findings suggest that mental ability does promote earnings attainment over and above investments in education and weeks worked.

Equation 2 also suggests that the areal labor market characteristics retain explanatory power when additional controls are introduced.⁹ Among whites the coefficients associated with wage per man hour, segregation index and percentage black remain statistically significant and evidence only minimal decrements in the sizes of their slopes. Among blacks, however, while these same coefficients retain statistical significance, we do notice decrements in the slopes of these coefficients which include a 20% reduction in size for the export sector productivity indicator, a 17% reduction for percentage black, and an 11% reduction for the segregation term.¹⁰ These findings suggest that there is some "matching" between labor market and personal characteristics.¹¹ In this case, black workers of higher mental abilities appear to be located in labor markets with more productive export sectors, greater proportions of black residents and greater degrees of residential segregation. Hence when mental ability is controlled,

the effects of these labor market factors are somewhat reduced. Such differential selection/socialization does not appear to be as noticeable among whites. It is important to recognize, however, that the impact of these labor market factors is still substantial among black workers, and nontrivial among whites as well.

These findings suggest that even in the presence of numerous controls for individual investments and personal characteristics, regional labor market characteristics are statistically significant predictors of earnings for blacks and whites.¹² In particular, Thompson's (1965) arguments concerning the importance of export sector productivity in influencing wage levels generally are supported for both races. Arguments by Blalock (1967) and Spilerman and Miller (1976) concerning the economic benefits which accrue to whites and the economic handicaps imposed upon blacks associated with concentrations of blacks in labor markets also receive support. Concerning the findings which suggest that both blacks and whites suffer due to residential segregation, these findings are clearly compatible with previous analyses for blacks (Kain and Persky, 1969; Mooney, 1969; Kain, 1968), though somewhat puzzling for whites. It may be that maintenance of high earnings levels for whites depends upon a given spatial distribution of the races which allows blacks to occupy the "bad" jobs in any neighborhood. If we assume that workers likely to occupy low paying jobs are employed within their neighborhoods of residence, and if residential segregation is high, then some whites will be "forced" to occupy the low paying jobs which in a desegregated neighborhood may go to blacks. Ostensibly if residential segregation were minimal and transportation to

⁹ Additional increment in R^2 tests were computed in order to assess whether the labor market variables explained variance above all of the background and investment variables. Such a strategy reflects a desire to evaluate conservatively the statistical significance of the labor market factors with respect to the background and investment variables. Given the predominance of status attainment models in analyses of inequality, this tack seems a reasonable one, although a "structuralist" could argue that status attainment variables should be tested net of the labor market factors. For both blacks and whites, addition of the labor market variables resulted in increments to explained variance significant at less than the .001 level.

¹⁰ Following Griliches and Mason (1973), I computed these percentages using the formula: $1 - \frac{b_{\text{true}}}{b_{\text{bias}}}$,

where the slopes from Equation 1 are taken as biased and those from Equation 2 as true.

¹¹ Hauser (1974) has argued that forces of social selection may account for the association between a contextual variable and an outcome, due to individuals placing themselves or being placed within contexts for which they are suited. While these findings lend some support to his hypothesis, the partial slopes remain statistically significant; thus the entire association may not be attributed to selection.

¹² It is not possible to indicate the relative importance of individual and structural variables in earnings attainment, partly due to use of dummy variables to represent the education and weeks worked constructs. Also, since the model contains different numbers of individual and structural variables, and since most in each set are statistically significant, comparisons of relative importance of the sets are hindered. In addition, the evidence cited above concerning multicollinearity between personal and structural variables suggests that questions concerning social selection may be more important than those regarding relative importance.

jobs readily available, earnings levels would not be influenced by these factors for either race. In summary, the findings suggest that while whites may lose and blacks may benefit economically if blacks were more proportionately distributed across labor markets, redistribution of the races *within* labor markets may benefit both groups. Both groups of workers may benefit from increments in areal labor market productivity.

We also notice greater levels of explained variance in the black specifications than in the white. Comparable findings have been produced in several other investigations of race and/or sex differences in earnings attainment (Blum, 1972; Treiman and Terrell, 1975; Harrison, 1972; Featherman and Hauser, 1976a, in the more complete specifications), though they have received little comment. These findings are not compatible with the notion that discrimination is manifest in lower returns to key resources for minority as opposed to majority group members. The magnitude of the coefficient of determination reflects in part the magnitudes of the partial slopes, and these slopes are interpreted as the amount of change in the dependent variable associated with a unit change in a given independent variable when the remaining variables are controlled. As we see in the following section, however, under certain circumstances such interpretations are questionable.

ASSESSMENT OF RACIAL DISCRIMINATION

The policy implications of analyses of outcome differences between groups have often been pursued via usage of regression standardization procedures (Duncan, 1969; Coleman et al., 1972b; Blum, 1972; Blinder, 1973; Hall and Kasten, 1973; Suter and Miller, 1973; Siegel, 1965; see Althausen and Wigler, 1972, for a review). Recently, however, Iams and Thornton (1975) have indicated that under certain conditions, estimates derived from several of the previously utilized procedures may be misleading. Their arguments suggest that failure to separate out an interaction component from the remaining terms may lead to erroneous inferences. In this

Table 3. Decomposition of Deflated Earnings for PSOID Blacks and Whites with Deflated Earnings Regressed on Individual Investments and Ecological Variables (Equation 2)

Composition	Components		
	Interaction	Regression Coefficients	Intercepts
\$4,205	-\$1,706	\$4,380	-\$2,352
Computed difference:	\$4,527		
Actual difference:	\$4,528*		

* Discrepancy attributed to accumulated rounding error.

analysis I adopt their procedure and decompose Equation 2 for blacks and whites into several components as follows:

$$\begin{aligned}\bar{Y}_w - \bar{Y}_n = & (b_{ow} - b_{on}) + \sum \bar{X}_{in} (b_{1w} - b_{1n}) \\ & + \sum b_{1n} (\bar{X}_{1w} - \bar{X}_{1n}) \\ & + \sum (\bar{X}_{1w} - \bar{X}_{1n}) (b_{1w} - b_{1n}).^{13}\end{aligned}\quad (1)$$

Such a decomposition will allow us to separate out changes in black/white earnings levels due to (1) the difference in intercepts, (2) the difference in slopes, (3) the difference in levels of resources and (4) an interaction term, interpreted as the effect of jointly changing both means and regression coefficients over the effects of changing them one at a time (Iams and Thornton, 1975:344).

Inferences concerning discrimination will be made on the basis of the decomposition of respective regression coefficients. Of particular interest are those indicators representing features of labor market social and economic organization. It is appropriate to view them as ecological resources, analogous to personal resources, which may facilitate earnings attainment. However, given that we have observed negative signs associated with the social organization indicators, these factors may be operating as mechanisms of racial discrimination, as opposed to resources to facilitate earnings attainment.

Table 3 presents the results of the application of the procedure to Equation 2 while Table 4 presents the full decomposition. Table 3 indicates that both slopes and the composition components are of

¹³ \bar{Y} = mean earnings; w = whites; n = blacks; b = Y intercept; \bar{X}_i = mean of the i^{th} resource; b_i = partial slope of the i^{th} resource.

Table 4. Full Decomposition of Equation 2 Utilizing Regression Standardization

Variables	Regression Coefficients Component $\bar{X}_n(b_w - b_n)$	Composition Component $b_n(\bar{X}_w - \bar{X}_n)$	Interaction Component $(b_w - b_n)$ $(\bar{X}_w - \bar{X}_n)$
6-8 yr. (Education)	-283.4109	-75.3208	106.0381
9-11 yr.	-176.0245	-114.4597	84.8951
12 yr.	140.7079	55.3232	99.7468
12+ yr.	189.3493	184.3449	193.4370
Graduate	15.0768	245.4769	496.7397
Graduate +	116.6424	327.0783	202.0991
Subtotal	2.341	622.4428	1182.9558
14-26 wks. (Weeks Worked)	-92.5407	-9.4815	21.0993
27-39 wks.	-77.6599	-86.0359	22.7412
40-47 wks.	-52.0741	-180.2429	8.8036
48-49 wks.	256.4157	462.1816	123.6980
50-52 wks.	-243.4264	175.7246	-23.1176
Subtotal	-209.2854	362.1459	153.2245
Occupational Prestige	-793.4742	583.9654	-353.7575
Experience	527.5942	-53.3989	-53.3913
Health Limitation	9.3337	38.4626	-3.4874
Unemployment Rate	-345.5992	-19.0509	-44.9050
Wage per man Hour	-1,024.2362	148.3792	-46.5739
Segregation Index	955.6189	350.8488	-31.9834
Migration	216.7546	41.4961	-78.1102
Percent Black In	4,911.5291	1,298.7462	-2,303.4354
Motivation Total	906.3919	11.1063	15.0236
Mental Ability	-929.9035	826.5959	-198.7134
Father's Education	153.0668	-6.8047	57.4211
Totals	4,380.1317	4,204.9347	-1,705.7325

approximately equal magnitude.¹⁴ This suggests that policy endeavors aimed towards equalizing the aggregate levels of black and white resources relevant to attainment and/or those which contribute to the equal translation of such resource into earnings would both result in the reduction of black-white earnings differences. However, the interaction term is negative: -\$1,706. This finding suggests that *increments* in the *levels* of black resources, for example, probably would result in some *decrements* in the *rates* at which these resources were translated into earnings.

Examination of the full decomposition in Table 4 provides evidence concerning

the potential effectiveness with which particular resources could be manipulated in attempts to promote racial economic equality. Concerning individual investments and personal resources, changes in the levels of resources such as occupational prestige and mental abilities¹⁵ as well as changes in the effectiveness of these two resources would contribute to increments in black earnings. However, we also notice that the interaction components associated with these terms are sizeable and negative; hence it is unlikely that changes in the distribution of the levels of efficacy of mental abilities¹⁶

¹⁴ The negative difference between the two intercepts (\$-2,352) may be due in part to inclusion of terms in the equation which are negative for blacks and positive for whites. When blacks have no access to "resources" which *hinder* their attainment, and whites have no access to resources which *aid* their attainment, the estimated black earnings level, other things equal, will be larger than that for whites. The negative difference also may be due in part to arbitrary zero points used in the scaling of some of the included variables.

¹⁵ Such outcomes may be due to nonlinearity between the independent variables and earnings. If there is a monotonic increasing relationship between mental ability and earnings, then increments in such ability above a given level may be unlikely to be associated with large gains in earnings.

¹⁶ The reader may argue that, following Cain and Watts (1970), it is inappropriate to include variables such as mental abilities or father's education in analyses designed to provide implications for policy. Such variables may not be as directly manipulable by policy as would be respondents' education or job

would result in the aggregate increases which the slopes and composition components would suggest. Concerning the analysis of returns to education, substitution of white for black efficacy of the operation of this resource would produce virtually no increment in blacks' earnings, while changes in the levels of this resource would produce noticeable increments. In addition, however, we see that the interaction component of the educational term is also strongly *positive*; hence changes in the levels and efficacy of educational attainment by race could result in additional increments in earnings due to the positive interaction of these changes. Generally positive contributions to black economic welfare would result from changes in distribution/efficacy of resources such as work motivation and family background as measured by father's education, although the latter effect is small. The bulk of the potential increment in black earnings due to adjustment of the motivation component would be due to changes in the *effectiveness* of the resource; hence the analysis suggests that blacks currently obtain reduced earnings due in part to forms of discrimination which prevent such motivation from yielding the financial returns to blacks which are enjoyed by whites.

Comparable analysis of the areal labor market variables suggests that the largest change in relative black-white economic status would be associated with changes in the distribution of the races across labor markets (percent black 1n). Such change is due to positive contributions from both the composition and efficacy components, although the negative interaction term indicates that the slopes and levels would not change independently of each other. Additional positive change would be

status. However, exclusion of these variables would result in misspecification of the model (Griffin, 1976); hence, inferences concerning the included variables would be erroneous. In addition, while it may be unrealistic to argue that the distribution of *levels* family background variables is directly manipulable by policy, analysis of racial differences in the *efficacy* of resources is an important part of our inference concerning discrimination. Exclusion of these terms from the analysis would prevent assessment concerning whether blacks' "returns" to these resources were equal to those obtained by whites.

forthcoming from equalization of the degree of residential segregation by race; negative changes would result from equalization of export sector productivity, due to blacks' losses in returns to this resource. Hence both residential segregation and racial competition may operate as mechanisms of discrimination against blacks, although alleviation of such discrimination must take into account the interactions outlined above.

These findings serve to temper those produced from the analysis of covariance in that they caution against a too literal interpretation of the regression coefficients, and, by implication, of regression coefficients generally. Particularly, when we observe greater returns to resources among minority than majority groups, we should suspect that such slopes may be due to depressed levels of resources, and thus positive changes in access to resources for minorities may be associated with negative changes in resource effectiveness. Such caution is particularly appropriate in interpreting findings associated with the mental abilities, occupational prestige, percent black 1n and residential segregation terms presented in Table 2.

SUMMARY AND CONCLUSIONS

I have offered arguments in favor of viewing economic status attainment as a function of both individual investments/socialization experiences and characteristics of areal labor markets. Using contextual analysis, I demonstrated that earnings of blacks and whites were positively affected by export sector productivity, negatively affected by residential segregation, and negatively and positively affected by black concentration, respectively; these findings were maintained in the presence of numerous controls for background factors. Policy considerations were explored using a regression standardization which indicated that changes in the distribution/efficacy of resources such as education, occupational prestige, percent black and residential segregation would be associated with improvements in black earnings levels, although estimation of the magnitude of these changes must

consider the interaction of changes in levels and effectiveness of resources. Of course, specific policy directives aimed at promoting racial economic equality must consider additional factors such as costs and feasibility of particular implementations which are beyond the scope of this analysis. We also should recognize that the findings produced in the regression standardization may be particularly sensitive to the specifications of the equations used. While every effort has been made to minimize specification error, equally plausible alternative specifications may yield somewhat distinct findings depending upon the magnitudes of the changes in the relevant slopes for blacks and whites.

Two aspects of the findings from the regression standardization deserve special note. First, it is infeasible to base policy recommendations upon the summary results presented in Table 3 since the findings in Table 4 suggest much variation by variable concerning whether changes in efficacy or levels of resources would be most effective in promoting racial economic equality. Second, it is difficult to advocate specific policy recommendations even on the basis of the analysis in Table 4 because important questions remain unaddressed. For example, given that increments in black resource levels may be associated with decrements in resource efficacy, should resource levels be equalized or not? If resource levels are equalized and that results in decrements in blacks' resource efficacy, there may still be major gains in black earnings due to their increased levels of available resources. Such an hypothesis is clearly speculative since it rests solely upon these correlational findings. However, given that younger cohorts evidence greater equality in access to personal resources than this one (Featherman and Hauser, 1976b), we may expect that greater racial equality in access to personal resources may be accompanied by actual decreases in returns to these factors, an important question for future research. We also may expect that under these conditions variations in structural resources will produce even stronger structural effects on earnings for these younger groups than for the cohort used in

this analysis. Such reasoning assumes that the racial distribution of structural resources remains fixed, an outcome which is far from certain. We also wonder how resource efficacy itself can be changed. It is possible that general programs aimed at reducing discrimination in employment—e.g., not requiring blacks to have superior qualifications to whites to obtain a given job—would result in equal observed returns to personal resources, but it is difficult to extend such arguments to apply to institutional resources.

Nonetheless, the analysis has provided clear evidence for the importance of regional labor market characteristics in the earnings attainment process for both blacks and whites. Theoretical arguments by Thompson (1965), Kain (1968) and his colleagues, Blalock (1967) and Spilerman and Miller (1976) have been supported. Finally, it is worth emphasizing again that the contextual models tested have permitted evaluation of structural explanations of inequality while simultaneously controlling for individual-level determinants of earnings. Hence, *both* perspectives have been subjected to (and withstood) a more conservative test than previously has been made. Carefully utilized, contextual analysis may be a valuable aid in the synthesis of theoretically related traditions which have not been effectively empirically integrated due to differing measurement strategies. Attention here has been focused upon a synthesis of background/investment and areal labor market explanations of inequality. Additional research is planned where occupational and industrial labor market characteristics will be similarly integrated with status attainment/human capital models. Areas of sociology in addition to that of status attainment and inequality, however, which also have evolved using both individual- and aggregate-level analyses of related phenomenae may find these arguments useful as well.

REFERENCES

- Alexander, K. and B. K. Eckland
1975 "Contextual effects in the high school attainment process." *American Sociological Review* 40:402-16.

- Althausen, R. P. and M. Wigler
1972 "Standardization and component analysis." *Sociological Methods and Research* 1:98-134.
- Althausen, R. P. and A. L. Kalleberg
1977 "Occupational and firm labor markets: toward a specification of structural factors in wage attainment." Paper presented at the American Sociological Association, Chicago.
- Bergmann, B. R.
1971 "The effect on white incomes of discrimination in employment." *Journal of Political Economy* 79:294-313.
- Blalock, H. M., Jr.
1967 *Toward a Theory of Minority Group Relations*. New York: Wiley.
- Blaug, M.
1976 "The empirical status of human capital theory: a slightly jaundiced survey." *Journal of Economic Literature* 14:827-55.
- Blinder, A. S.
1973 "Wage discrimination: reduced form and structural estimates." *Journal of Human Resources* 8:436-55.
- Blum, Z. D.
1972 "White and black careers during the first decade of labor force experience. part II: income differences." *Social Science Research* 1:271-92.
- Cain, G. C. and H. W. Watts
1970 "Problems in making policy inferences from the Coleman report." *American Sociological Review* 35:228-42.
- Cohen, J. and P. Cohen
1975 *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Hillsdale: Lawrence Erlbaum Associates.
- Coleman, J. S., C. C. Berry, and Z. D. Blum
1972a "White and black careers during the first decade of labor force experience, part III: occupational status and income together." *Social Science Research* 1:293-304.
- Coleman, J. B., Z. D. Blum, A. B. Sorensen, and P. H. Rossi
1972b "White and black careers during the first decade of labor force experience, part I: occupational status." *Social Science Research* 1:243-70.
- Duncan, O. D.
1968 "Ability and achievement." *Eugenics Quarterly* 15:1-11.
1969 "Inheritance of poverty or inheritance of race?" Pp. 85-110 in D. P. Moynihan (ed.), *On Understanding Poverty*. New York: Basic Books.
- Farley, R.
1977 "Trends in racial inequalities: have the gains of the 1960s disappeared in the 1970s?" *American Sociological Review* 42:189-208.
- Featherman, D. L. and R. M. Hauser
1976a "Sexual inequalities and socioeconomic achievement in the U.S., 1962-1973." *American Sociological Review* 41:462-83.
1976b "Changes in socioeconomic stratification of the races, 1962-73." *American Journal of Sociology* 82:621-51.
- Franklin, R. S.
1968 "A framework for the analysis of interurban Negro-white economic differentials." *Industrial and Labor Relations Review* 21:370-9.
- Glenn, N. D.
1963 "Occupational benefits to whites from the subordination of Negroes." *American Sociological Review* 28:443-8.
1966 "White gains from Negro subordination." *Social Problems* 14:159-78.
- Griffin, L.
1976 "Specification biases in estimates of socioeconomic returns to schooling." *Sociology of Education* 49:121-39.
- Griliches, Z. and W. Mason
1973 "Education, income and ability." Pp. 185-316 in A. S. Goldberger and O. D. Duncan (eds.), *Structural Models in the Social Sciences*. New York: Seminar Press.
- Hall, R. E. and R. A. Kasten
1973 "The relative occupational success of blacks and whites." *Brookings Papers on Economic Activity* 3:791-802.
- Hanushek, E. A.
1973 "Regional differences in the structure of earnings." *Review of Economics and Statistics* 55:204-13.
- Harrison, B.
1972 *Education, Training and the Urban Ghetto*. Baltimore: Johns Hopkins University Press.
- Hauser, R. M.
1974 "Contextual analysis revisited." *Sociological Methods and Research* 2:365-75.
- Hodge, R. W. and P. Hodge
1965 "Occupational assimilation as a competitive process." *American Journal of Sociology* 71:249-64.
- Iams, H. H. and A. Thornton
1975 "Decomposition of differences: a cautionary note." *Sociological Methods and Research* 3:341-52.
- Jencks, C., M. Smith, H. Acland, M. J. Bane, D. Cohen, H. Gintis, B. Heyns and S. Michelson
1972 *Inequality: A Reassessment of the Effect of Family and Schooling in America*. New York: Basic Books.
- Jiobu, R. N. and H. H. Marshal, Jr.
1971 "Urban structure and the differentiation between blacks and whites." *American Sociological Review* 36:638-49.
- Kain, J. F.
1968 "Housing segregation, Negro employment and metropolitan decentralization." *Quarterly Journal of Economics* 82:175-97.
- Kain, J. F. and J. J. Persky
1969 "Alternatives to the gilded ghetto." *Public Interest* 14:74-87.
- Kalacheck, E. and F. Raines
1976 "The structure of wage differences among mature male workers." *Journal of Human Resources* 11:484-506.

- Kluegel, J. R.
 1978 "The causes and cost of racial exclusion from job authority." *American Sociological Review* 43:285-301.
- Lane, A.
 1972 *Contexts of Socio-Economic Attainment: The Role of Community, Industry of Employment and Spatial Mobility*. Ph.D. dissertation, Department of Sociology, University of Chicago.
- Lazarsfeld, P. F. and H. Menzel
 1969 "On the relation between individual and collective properties." Pp. 499-516 in A. Etzioni (ed.), *A Sociological Reader on Complex Organizations*. 2nd ed. San Francisco: Holt, Rinehart and Winston.
- Lieberman, S.
 1973 "Generational differences among northern blacks." *American Journal of Sociology* 79:550-65.
- Masters, S. H.
 1975 *Black-White Income Differentials*. New York: Academic Press.
- Mincer, J.
 1970 "The distribution of labor incomes: a survey—with special reference to the human capital approach." *Journal of Economic Literature* 8:1-26.
 1974 *Schooling, Experience, and Earnings*. New York: NBER.
- Mooney, J. D.
 1969 "Housing segregation, Negro employment and metropolitan decentralization: an alternative perspective." *Quarterly Journal of Economics* 83:299-311.
- Price, D. O.
 1969 *Changing Characteristics of the Negro Population*. Washington, D.C.: U. S. Government Printing Office.
- Reder, M. W.
 1955 "The theory of occupational wage differentials." *American Economic Review* 45:833-52.
- Siegel, P. M.
 1965 "On the cost of being a Negro." *Sociological Inquiry* 35:41-57.
 1971 *Prestige in the American Occupational Structure*. Ph.D. dissertation, Department of Sociology, University of Chicago.
- Snyder, D. and P. Hudis.
 1976 "Competition and minority income." *American Sociological Review* 41:209-34.
- Sørensen, A., K. E. Taeuber and L. J. Hollingsworth, Jr.
 1974 "Indexes of racial residential segregation for 109 cities in the United States, 1940 to 1970." Unpublished manuscript, University of Wisconsin, Madison.
- Spilerman, S.
 1977 "Careers, labor market structure and socioeconomic achievement." *American Journal of Sociology* 83:551-93.
- Spilerman, S. and R. E. Miller
 1976 "Community and industry determinants of the occupational status of black males." Discussion Paper #330. Institute for Research on Poverty, University of Wisconsin, Madison.
- Stolzenberg, R.
 1975 "Occupations, labor markets and the process of wage attainment." *American Sociological Review* 40:645-65.
- Survey Research Center
 1972 *A Panel Study of Income Dynamics*. Vols. 1 and 2. Institute for Social Research, University of Michigan, Ann Arbor.
- Suter, L. E. and H. P. Miller
 1973 "Income differences between men and career women." *American Journal of Sociology* 78:962-74.
- Szymanski, A.
 1976 "Racial discrimination and white gain." *American Sociological Review* 41:403-14.
- Taeuber, A. F., K. E. Taeuber and G. C. Cain
 1966 "Occupational assimilation and the competitive process: a reanalysis." *American Journal of Sociology* 72:273-85.
- Thompson, W. R.
 1965 *A Preface to Urban Economics*. Baltimore: Johns Hopkins University Press.
- Treiman, D. J. and K. Terrell
 1975 "Sex and the process of status attainment: a comparison of working women and men." *American Sociological Review* 40:174-200.
- Turner, R. H.
 1951 "The relative position of the Negro male in the labor force of large American cities." *American Sociological Review* 16:524-9.
- U.S. Bureau of Census
 1970 *Census of Population*. Various volumes. Washington, D.C.: U.S. Government Printing Office.
 1975 *Census of Manufacturers (1972)*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Labor, Bureau of Labor Statistics
 1973 *Urban Family Budgets and Comparative Indexes for Selected Urban Areas*, Autumn, 1972. Bureau of Labor Statistics Regional Offices.
- Wachtel, H. M. and C. Betsey
 1972 "Employment at low wages." *Review of Economics and Statistics* 54:121-9.
- Weiss, L. and J. G. Williamson
 1972 "Black education, earnings and interregional migration." *American Economic Review* 62:372-83.
- Weiss, R. D.
 1970 "The effect of education on the earnings of blacks and whites." *Review of Economics and Statistics* 52:150-9.

POVERTY AND INFANT MORTALITY IN THE UNITED STATES*

STEVEN L. GORTMAKER

Harvard University

American Sociological Review 1979, Vol. 44 (April):280-297

This paper examines the theoretical and empirical relationship of income poverty to infant mortality differentials in the contemporary United States. Using national data gathered in 1964-65, this study estimates the relative impact of a variety of biological, social, and economic factors upon the risk of infant death. Methods for the analysis of multidimensional contingency tables permit the combination of birth and death data, and coefficient estimates from these models provide estimates of the relative risks of infant death observed in various subpopulations. Within the white population of legitimate births in 1964-65, coefficient estimates indicate that poverty is associated with relative risks of neonatal and postneonatal mortality 1.5 times greater than that experienced by infants not born in poverty, independent of a variety of maternal and familial characteristics and the birth weight of the infant. Hospital care during the neonatal period, however, appears to attenuate this increased risk for some high risk infants. The estimated direct effects of poverty upon infant mortality are larger than the effects of poverty mediated by the birth weight of the infant. The persistence of poverty and the continuing unequal distribution of health care resources to pregnant women and young mothers in the United States imply the reproduction of these differentials to the present day. Increasing access to health services and increased help to families through income supports and employment programs are indicated as possible policy actions to reduce these differentials.

1. INTRODUCTION

Social scientists have documented extensively inverse relationships between the socioeconomic status of individuals and their risk of death in the industrialized countries of the world; individuals with less income, less education, and of lower

occupational status tend to experience higher rates of mortality than persons of higher status. Furthermore, in spite of substantial improvements in standards of living, educational attainment, and access to medical care during recent decades, these differentials persist to the present day in the industrialized nations (Benjamin, 1965; Antonovsky, 1967; Kitagawa and Hauser, 1973; Kitagawa, 1977). Such differential mortality can be conceptualized as one possible consequence of the stratification process imposed upon and negotiated by individuals during their lifetimes; mortality differences thus constitute an important measure of the quality of life associated with different statuses.

Stratification differentials can cause differential mortality, as in the case of certain occupationally related diseases. Many deaths, however, are the consequence of behaviors such as smoking and auto accidents (Fuchs, 1975) which are less directly related to socioeconomic status. In addition, some individuals become ill and lower their income status before death, resulting in a reversed casual relationship (Kitagawa and Hauser, 1973). Thus, the association of adult mortality to socioeconomic status is difficult to specify in general.

* Address all communications to: Steven L. Gortmaker; Department of Behavioral Sciences; School of Public Health; Harvard University; Boston, MA 02115.

During the preparation of this work the author was supported by the National Institute of General Medical Sciences Training Program in Methodology and Statistics Grant 5-T01-GM011526-08, by funds granted to the Institute for Research on Poverty at the University of Wisconsin-Madison, by the Office of Economic Opportunity pursuant to the Economic Opportunity Act of 1964, and by a Center for Population Research Grant No. HD05876, from the Center for Population Research of the National Institute of Child Health and Human Development to the Center for Demography and Ecology at University of Wisconsin-Madison. I am indebted to Hal H. Winsborough for constant encouragement and many instructive discussions and would like to thank Robert M. Hauser and David Mechanic for helpful comments on an earlier draft. The comments of two anonymous reviewers are gratefully acknowledged. The data were obtained from the National Center for Health Statistics. The opinions expressed are those of the author and should not be attributed to the institutions or individuals named above.

The present analysis examines infant mortality differentials in the contemporary United States, and asks the question: Is poverty hazardous to an infant's health? The extreme dependence of the newborn upon others makes infant mortality a sensitive measure of the quality of life associated with different socioeconomic environments. Furthermore, infants exercise no responsibility for their environment and health status, and thus an infant's own motivations and actions have little impact upon its chances for survival; most influences should come from its parents and the surrounding environment.

Differentials in infant mortality rates between population groups have been a topic of interest to social scientists for a long time. In the latter half of the nineteenth century, for example, Marx (1867:397-8) described in detail the differentials in infant mortality existing across registration districts in England; they ranged from a low of 70 per 1,000 to a high of 250 per 1,000 in the most heavily industrialized areas of the country. These differentials were in large part a result of the terrible conditions under which these exploited working-class populations lived. Income poverty, inadequate sanitation, poor health care, inadequate nutrition, and mothers who were forced to work because of their poverty, and thus neglected their children were all too common circumstances into which children were born.

Although such extremely high absolute levels of infant mortality are no longer found in the industrialized countries of the world, the persistence of class differentials within these countries has been documented. Research in Great Britain, for example, indicates that infant mortality differentials by occupation of father persisted throughout the years 1911-1949, despite tremendous increases in the general standard of living and in the quantity and quality of medical care made available under the National Health Service (Morris and Heady, 1955:344).

Differentials in infant mortality in the United States have been linked to income poverty of the parents since the beginning of this century (Children's Bureau, 1921)

and national data from 1964-66 indicate the contemporary persistence of this relationship: in 1964-66 white infants born to parents earning less than \$3,000 per year experienced a death rate of 27.3 per 1,000, while white infants born to parents earning \$5,000 or more per year experienced a death rate of 18.6 per 1,000 (National Center for Health Statistics, 1972).

These differentials take on added significance when it is realized that death rates during the first year of life in the United States are exceeded only by death rates of those aged 65 and older (U.S. Department of Commerce, 1974). Old age and infancy are the times of greatest risk to human life, and thus the magnitude of these observed differentials is considerable. However, a consciousness of the meaning of these different rates may not be widespread throughout a population—only one in 50 parents of new infants experience an infant death in a given year. A better understanding of the magnitude of these differentials is gained by applying the mortality rate experienced by infants born to parents earning \$5,000 or more per year to infants born to parents earning less than \$3,000. If the entire infant population in the United States could have experienced the wealthier force of mortality, approximately 4,000 more infants would have survived each year.

The mere existence of differentials by income, however, does not constitute a satisfactory explanation of these differences. There are a variety of other factors related to infant mortality which also may be related to income (Shapiro et al., 1968; Institute of Medicine, 1973; Mechanic, 1968) and thus we need to control for such factors within the context of a theory if convincing tests of relationships between income poverty and infant death are to be made.

Poverty, for example, occurs often among young families (Lampman, 1971:72), and infants born to young mothers experience higher risks of infant mortality than infants born to mothers in their middle and late twenties (Shapiro et al., 1968). Thus, any assessment of the relationship between poverty and infant mortality must include correlated factors such as age of mother in the analysis so

that these other possible explanations can be tested and controlled.

2. METHODOLOGICAL APPROACH

The present study estimates multivariate structural equations which predict infant mortality and other intervening variables—such as birth weight—in the infant mortality process. The data consist of nationwide random samples of births and infant deaths (defined as occurring during the first year after birth) in 1964–65 in the United States (National Center for Health Statistics, 1972). Three aspects of the present approach are particularly noteworthy. First, although systematic experimental trials (including randomized assignment to treatment) offer the most desirable evidence for imputing causality, a variety of problems render them inappropriate for the research reported here. Ethical problems with the manipulation of life chances, as well as cost considerations in the alteration of stratification characteristics of a population combine to make the present observational approach quite attractive. By statistically controlling for a variety of factors simultaneously, the present research should offer some reasonable estimates of effects. Furthermore, quite a large amount of natural variability exists within the United States population; this fact provides the present research with considerable numbers of situations to study. In particular, it offers the opportunity to look at the extremes of the stratification system, for, as will be discussed later, it is under situations such as extreme poverty that substantial effects upon infant mortality are expected.

Second, the data is somewhat unique in that it comes from national random samples of infant births and deaths (National Center for Health Statistics, 1972). Most previous research looking at the relationship of socioeconomic status to infant mortality in the United States has depended upon local samples from areas such as New York City (Institute of Medicine, 1973), upper New York state (Chase, 1964), Baltimore (Shah and Abbey, 1971), and Wisconsin (Slesinger and Travis, 1975). No problems of generaliz-

ing to the total United States population are encountered with the present data.

Finally, the present work utilizes relatively recently developed log-linear models for the analysis of multidimensional contingency tables. These methods permit the combination of samples of births and infant deaths, and allow for the multivariate analysis of relative risks. Illustrative diagrams display variables and their relationships (Goodman, 1973a) and serve as useful guides to the theory being tested in much the same way that path diagrams have proven helpful in the conceptualization of social phenomena (Duncan, 1966). The usefulness of this approach lies in the researcher's ability to display casual assumptions concisely, and to explicitly test theories based upon these assumptions. Through the estimation of structural equations, one gains insight into the relative magnitudes of effects operating, and obtains an overview of the process under investigation.

The data were collected between 1964 and 1965 as part of the National Center for Health Statistics (NCHS) National Natality and National Infant Mortality Surveys (NNS and NIMS). These surveys were designed to obtain information not normally found on birth and death certificates—in particular, questions about the socioeconomic characteristics of the infants' parents were asked. Similar questionnaires were used for both the birth and infant death surveys; only deaths to legitimate infants were included in the study.

Information on respondents was obtained from a variety of sources: birth certificates (NNS), death certificates (NIMS), hospital records (NIMS), as well as from the questionnaires themselves (both NNS and NIMS). The questionnaires usually were completed by the mother, but in rare instances by other family members (NCHS, 1972:2). The questionnaires initially were mailed to respondents; follow-up procedures were used, including remailings as well as personal interviews if no response occurred within two to three weeks. "For the 2,160 legitimate infant deaths in the 1964–1966 NIMS, the response rate was 88%. For

the 10,395 legitimate births in the 1964-1966 NNS, the response rate was 89%" (NCHS, 1972:46). The statistics in the present research are based upon poststratified responses and thus should be more representative of the population of births and infant deaths than would be expected with a random sample alone (NCHS, 1972:50).

3. STRATIFICATION AND INFANT DEATH IN THE UNITED STATES

A large variety of socioeconomic variables has been related to differentials in infant mortality. These include: parental income (Children's Bureau, 1921; Anderson, 1958; Willie, 1959; Willie and Rothney, 1962; Stockwell, 1962; Fuchs, 1974; NCHS, 1972); education of mother (NCHS, 1972; Institute of Medicine, 1973; Slesinger and Travis, 1975); education of father (NCHS, 1972); occupation of father (Morris and Heady, 1955; Chase, 1964); and racial-ethnic identity (Shapiro et al., 1968). The present analysis focusses upon the achieved statuses above, particularly income, although further work upon racial differentials is being prepared (Gortmaker, 1977b).

An important distinction often made in the analysis of infant death defines two components of infant mortality: neonatal mortality, or deaths to live-born infants which occur during the first four weeks of life, and postneonatal mortality, or deaths which occur during the remainder of the first year of life. Neonatal and postneonatal death rates are defined as the number of neonatal or postneonatal deaths per 1,000 live births. By definition, in any given year, the neonatal and postneonatal mortality rates sum to the infant mortality rate for that year.

One important characteristic of the distinction just made is that different causes of death predominate in the neonatal and postneonatal periods. Neonatal mortality tends to be dominated by death classifications such as immaturity of the infant, postnatal asphyxia and atelectasis, birth injuries, and congenital malformations—in general, causes of death were the "influence of conditions

present before birth or that occur during the birth predominate" (Shapiro et al., 1968:27). Alternatively, during the "postneonatal period, the infectious diseases, particularly pneumonia and influenza, dominate as causes of death. Also, accidents begin to assume a major role in mortality" (Shapiro et al., 1968:27).

These two components of infant mortality are related differentially to environmental factors which influence the health of the newborn. In particular, deaths to infants with congenital malformations often are unrelated to the environmental conditions under which an infant develops, with the exception of certain teratogenic agents such as thalidomide (Gruenwald, 1974). Deaths due to the immaturity of the infant similarly have been described as being related in little known ways to the environment of the developing fetus (Morris and Heady, 1955; Shapiro et al., 1968:92). Many deaths due to infectious diseases such as pneumonia and influenza, on the other hand, certainly could be prevented through improved medical and home care (Department of Health and Social Security, 1970) and thus should be influenced strongly by environmental factors. These rough distinctions imply that socioeconomic differentials in infant mortality are very likely largest in the postneonatal period, although there also exists potential for reduction of deaths due to infection by prophylactic health measures during the neonatal period (Vaughan and McKay, 1975:322).

Studies of the relationships between socioeconomic status and infant mortality which focus upon this distinction have come to two general conclusions. First, a tremendous change has taken place in the last half-century in the distribution of deaths into these two categories. In 1918, approximately 44% of all infant deaths occurred during the neonatal period, and thus 56% occurred during the postneonatal period (National Office of Vital Statistics, 1920). In contrast, the 1974 distribution indicates that 77% of all infant deaths occurred during the neonatal period, and only 23% occurred during the postneonatal period (National Office of

Vital Statistics, 1975). This decline in the relative size of the postneonatal component has been interpreted to mean that the importance of socioeconomic variables in the infant mortality process has declined over the last 60 years (Morris and Heady, 1955; Willie, 1959; Stockwell, 1962).

Secondly, these studies point to the significance of income in the determination of relative risks (Anderson, 1958; Willie, 1959; Willie and Rothney, 1962; Stockwell, 1962), although the rather small contemporary relationships found have led these authors to emphasize the changing nature of infant mortality, and thus to downplay the current relationships between income and infant death. Because these studies used small samples and highly aggregated units of analysis, however, this emphasis may seem questionable. Recent national data (NCHS, 1972) indicates quite significant differentials in infant mortality rates by income; unfortunately, no distinction is made in this analysis between neonatal and postneonatal death and few controls for other variables are made. Other recent results based upon more restricted samples, but utilizing sophisticated techniques of analysis, indicate significant relationships between the socioeconomic status of census tracts and the increased risk of postneonatal mortality (Shah and Abbey, 1971), and a significant relationship between education of the mother and infant mortality (Slesinger and Travis, 1975). No income measures are included in these studies.

Previous research thus has demonstrated the existence of significant differentials in the risk of infant death by a

variety of indices of socioeconomic status, within a variety of locales, and while statistically controlling for a variety of variables. Yet, a precise explication of the role of poverty in the infant mortality process in the United States remains to be accomplished. The present research offers some initial estimates of the relationship of poverty to infant mortality through estimation of multivariate structural equations.

4. A CONCEPTUAL MODEL: THE EFFECTS OF POVERTY UPON INFANT DEATH

A significant orientation of the present research is a focus upon extreme income poverty as a determinant of infant death, as opposed to the specification of a linear relationship between family income and differentials in infant mortality. As Mechanic (1968:246) suggests:

—the relationship may hold only when deprived social and cultural groups are involved, so that we might expect a curve characterizing the relationship to reach a plateau at a level of income which might be thought of as relatively low.

The notion of such a critical income level was introduced by Anderson (1958), and research by Willie and Rothney (1962), as well as more recent national data (NCHS, 1972) support this conceptualization.

The definition of poverty used in the present analysis is based upon guidelines published by the Community Services Administration which take into account total family income, family size, and consumer prices as charted by the Consumer Price Index (Community Services Administration, 1975). (See Appendix.) Table 1 presents estimates of both

Table 1. Estimated Neonatal and Postneonatal Mortality Rates by Poverty Status of Family for White, Legitimate Infants, 1964-65 in the United States^a

Poverty Status of Family	Births	Neonatal Deaths	Postneonatal Deaths	Neonatal Rate**	Postneonatal Rate**
Parents Income below Extreme Poverty*	907	188	85	22.8 (1.2)	10.3 (1.0)
Parents Income above Extreme Poverty*	5,278	690	218	14.4 (.7)	4.5 (.3)

* See the Appendix for discussion of extreme poverty guidelines.

** Both neonatal and postneonatal rates are expressed as deaths per 1,000 live births.

^a Note: births must be multiplied by 1,000 and deaths by 110 to obtain population estimates. Approximate standard errors given in parentheses. (Standard errors obtained from NCHS, 1972:53.)

neonatal and postneonatal mortality rates by poverty status of a family in 1964-65.

The human infant is remarkably dependent upon others for survival at birth, and newborn humans are thus exceedingly susceptible to negative influences upon their health. The fact of poverty can present a variety of hazards to the newborn and can impose constraints upon many areas of parental activity in defense of their offspring. These hazards and constraints can emerge in the form of inferior housing, poor sanitary facilities at home, lack of adequate food and clothing, inadequate hospital or postnatal medical care, lack of transportation facilities—meaning difficulty in obtaining needed services. Finally, those in poverty are often vulnerable to the experience of stressful situations. All of these factors can have damaging effects upon the health of the newborn. Poor housing, for example, has been implicated in high rates of death due to infectious diseases during the two to eleven months after birth in England (Department of Health and Social Security, 1970) and preventable infections are also prevalent in the neonatal period (Vaughan and McKay, 1975: 322).

One useful distinction concerning the effects of poverty upon infant mortality separates the effects of poverty described above—those which impinge directly upon the newborn—from the consequences of poverty which may hinder the development of the fetus, and hence which are mediated quite literally by the mother during the prenatal period. The most studied indicator of the development of the fetus is birth weight: although only 7% of all births in the present study are of low birth weight (less than 2,500 gm), 61% of all infant deaths occur to this 7%. Birth weight is thus usually described as the intervening variable which best predicts infant mortality.

Furthermore, a substantial number of characteristics of the mother and her behaviors has been linked to an increased risk of low birth weight. Both "natural experiments" with famines during World War II (Smith, 1947; Antonov, 1947) and a more recent experiment in Guatemala (Habicht et al., 1974) highlight the impact of inadequate nutrition of mothers upon

subsequent birth weight of the infant. Low maternal weight (O'Sullivan et al., 1965; Rush et al., 1972), maternal smoking (Fielding and Yankauer, 1978a), consumption of alcohol (Fielding and Yankauer, 1978b), and lack of prenatal care (Institute of Medicine, 1973; Gortmaker, 1979) are other factors related to the increased risk of low birth weight. The extent to which poverty is related to infant death both independently of birth weight, and indirectly via birth weight, thus provides two different explanations for the effects of poverty upon infant mortality. Strategies to reduce the impact of poverty upon birth weight should be aimed at helping the mother during the prenatal period; strategies directed toward infant deaths which are related to poverty independently of birth weight, in contrast, should be aimed at helping the mother and infant during and after birth.

Another important distinction concerns the effects of poverty—and other aspects of stratification—which may influence infant death indirectly through the health care received by mother and infant, and those effects of poverty which influence infant mortality independently of the delivery of health services. A variety of health practices have been related to the risk of infant death. For example, prenatal care has been related to increased risk of low birth weight (Institute of Medicine, 1973; Gortmaker, 1979); neonatal intensive care has been linked to decreased risk of death due to small size and immaturity of the newborn (Institute of Medicine, 1973); and postneonatal deaths may be averted through appropriate physician and hospital practice (Department of Health and Social Security, 1970: 20). Three indicators in the present data set allow for some control over the indirect influences of poverty via health care: Birth weight already has been mentioned as one factor sensitive to care received during the prenatal period. Whether or not the baby was delivered in a hospital serves as one extreme indicator of lack of medical care. Finally, whether or not health insurance for physician and hospital care is possessed by parents serves as a rough indicator of the availability of medical care. These variables must be recognized as

only crude indicators of the receipt of health services by mother and child, and thus the impact of health care may be underestimated in our analyses.

A variety of other factors have been associated with infant mortality differentials, and are included in the present analysis. Educational attainment of the mother and father, for example, serves to indicate a variety of nonfinancial characteristics of the family, such as knowledge of health practices, or life-style differences which may influence the care of a developing child (Slesinger, 1973; Benjamin, 1965:48-9).

Age of the mother also has been associated with differential chances for infant survival. Certain birth defects, such as chromosomal abnormalities, occur more often to older women (Apgar, 1970). Young age of the mother is associated with increased risk of infant death, although recent research indicates that the effect of a young woman's age upon infant mortality may in fact be due to the relatively lighter weight of young mothers (O'Sullivan et al., 1965; Rush et al., 1972) or to a lack of prenatal care (Gortmaker, 1979).

Increasing risks of death also are reported for increasing birth orders (Shapiro et al., 1968:60-1). One interpretation of this relationship is that increasing family size leads to increased chance of the spread of infectious disease, as well as to increased strain on parental care, and thus to increased postneonatal mortality (Benjamin, 1965:46).

Mothers who had a previous history of pregnancy loss or who experienced a previous infant death exhibit higher than average rates of infant death in their current pregnancy (NCHS, 1973). A possible explanation is the hypothesis that "certain women may be reproductively more efficient, because an undue number of pregnancy losses appear to be concentrated in a relatively small group of women, and the type of loss tends to be repeated" (Institute of Medicine, 1973:118-9). This variable will be controlled in the analyses that follow in order to rule out the hypothesis that observed relationships may be due to such a biological mechanism. Finally, the present analysis is restricted to the popu-

lation of white, legitimate infants in the United States. Other analyses have been prepared, however, which examine differentials in infant mortality by race and legitimacy status (Gortmaker, 1977a; 1977b).

5. ANALYTIC METHODS

Discrete multivariate logistic, or modified multiple regression models, in large part developed and expositied by Yvonne M. M. Bishop (Bishop and Mosteller, 1969; Bishop et al., 1975) and Leo A. Goodman (Goodman, 1972; 1973a; 1973b) are applied to the present data. Quantitative models of the following form thus are used as a means of specifying and estimating relationships between variables of interest:

$$E(\text{death rate}_{ij\dots n}) = \gamma\gamma_i^A\gamma_j^B\dots\gamma_n^N. \quad (1)$$

This formula states that the expected death rate for cell $ij\dots n$ of a N dimensional cross-classification table can be written as a product of γ 's. Furthermore, the model specifies that $\Pi\gamma_k^K = 1.0$, for $K = A, B, \dots, N$. The i, j, \dots, n indices refer to levels of dimensions A, B, \dots, N . Taking the natural logarithms of both sides of formula (1) results in the equivalent log-linear expression:

$$\lg E(\text{death rate}_{ij\dots n}) = B + B_i^A + B_j^B + \dots + B_n^N, \quad (2)$$

where $B = \lg\gamma$, $B_i^A = \lg\gamma_i^A$, $B_j^B = \lg\gamma_j^B$, \dots , $B_n^N = \lg\gamma_n^N$. Furthermore, this reparameterization specifies that $\sum_k B_k^K = 0.0$.

Higher order interaction terms also can be added to equations (1) and (2).

Maximum likelihood estimates of the γ 's (or equivalently, of the B 's) are obtained under a variety of sampling schemes using programs such as ECTA.¹ This fact is fortuitous for the present research; although the data consist of probability samples of one out of every 1,000 births and one out of every 110 infant deaths, these samples do not have to be

¹ ECTA, a program to calculate log-linear fits for hierarchical models for contingency tables, is available from Professor Leo A. Goodman, Department of Statistics, University of Chicago.

weighted differentially to obtain maximum likelihood estimates of the B_n^N (or γ_n^N parameters) (Bishop et al., 1975). The $B = \lg y$ parameter estimates are affected, but these are of little substantive interest. No corrections for degrees of freedom are thus required for statistical tests. Statistics based upon these maximum likelihood estimates are distributed according to the χ^2 distribution. The flexibility of this log-linear model to accept such data is one reason to favor this approach over a regression approach. In addition, other problems such as heteroscedasticity and out-of-range estimates (Goldberger, 1964; Nerlove and Press, 1973) are avoided.

The effect parameters estimated under a given model are interpreted in a variety of ways. The relative sizes of the effect parameters indicate the relative influence upon the dependent variable of the different independent variables in the model, or their interactions. In addition, ratios of the estimated γ coefficients can be interpreted in terms of relative risks (MacMahon et al., 1960:229). An example should make this property of the model clear. For simplicity, let the variable A have two categories: $\gamma_1^A =$ being in income poverty, $\gamma_2^A =$ not being in income poverty. Furthermore, let the sample estimates for these coefficients equal $\hat{\gamma}_1^A = 1.2$ and $\hat{\gamma}_2^A = \frac{1}{1.2}$.

The effect of being in income poverty upon the expected death rate is to multiply the product $\hat{P} = \hat{\gamma}_1^A \dots \hat{\gamma}_n^A$ by 1.2, while the effect of not being in income poverty is to multiply this product by $1/1.2$ (with the effects of all other factors held constant). Thus, the relative effect of $\hat{\gamma}_1^A$ vs. $\hat{\gamma}_2^A$ is to increase the expected death rate under the given model by a factor of $(1.2)^2 = 1.44$. Taking condition 2 as a base (not being in poverty), one can say that the effect of the poverty condition, net of other variables in the model, is to increase the death rate 44%. Similarly, one can obtain a comparable figure from the log-linear form (2).

6. SPECIFICATION AND ESTIMATION OF EQUATIONS

Two varieties of infant death are specified: both neonatal and postneonatal

mortality.² Parents are classified as either in or out of poverty; application of the extreme poverty guidelines presented in the Appendix results in approximately 15% of births to two-parent white families in 1964-65 occurring in poverty.

Education of mother and education of father are dichotomies which classify them as having less than nine years of completed education. Age of mother is defined by four categories: less than 20, 20-24, 25-34, and 35+. Birth order of the child likewise is divided into four categories: first, second, third, and fourth or higher order birth. Whether or not the mother experienced a previous loss (fetal death or miscarriage) or an infant death is represented by a variable termed *pregnancy experience*.

Two variables relate directly to the health care experience of the mother: these concern whether the parents do not possess health insurance for physician and hospital care, as well as whether or not the baby is delivered in a hospital.

Finally, birth weight of the infant is coded as either less than or greater than 2,500 grams, the commonly accepted definition of low birth weight. The use of a dichotomous measure, rather than a simple linear one, is indicated by the fact that infant death rates are related to birth weight in a nonlinear fashion. For infants weighing less than 2,500 gm at birth, death rates are quite high. For those infants weighing less than 2,500 gm, however, there is substantially less variation in the risk of death. Birth weight is utilized as an indicator of fetal development, rather than other measures such as gestation length, because research has indicated that birth

² The samples are of births and deaths, and thus the dependent variables are expected death rates for a particular cell of a cross-classification table. The numerators are for these expected numbers of neonatal and postneonatal deaths. The models assume that the exposed population is in each case the same—the expected total number of live births in that particular cell. Strictly speaking, the exposed population for the postneonatal period would be better approximated by the live births minus all neonatal deaths. Such a correction, however, amounts to a change of only approximately 120 (out of 7,000) exposed infants. For simplicity, this imprecision in the estimation procedure is ignored.

weight is more influenced by environmental factors (Gruenwald, 1974; Gruenwald et al., 1967), and is also more predictive of subsequent infant problems than is a short gestation (Neligan et al., 1976).

The infant mortality process is conceptualized as a causally ordered sequence; this leads to the specification of a variety of dependent variables. Some of these are considered the outcome variables of greatest interest, such as neonatal mortality and postneonatal mortality, while others, such as birth weight of the infant, are considered intervening variables. Operationalizing this view of the infant mortality process in terms of the variables defined above results in a set of recursive relationships which are illustrated in Figure 1.

The mother's prior pregnancy experience thus is seen as determined in part by social and demographic characteristics of her family and herself, while lack of possession of insurance for physician and hospital care is conceptualized as dependent upon these family background factors, as well as upon the mother's prior reproductive experience. Birth weight, in turn, is related to all factors which characterize the mother's and family's situation prior to birth. Neonatal mortality (and postneonatal mortality) occur during the year following birth, and thus constitute the end points of the process.

Each of the dependent variables noted above contains two categories. Hence, each of the relationships described was translated into an equation of the log-linear form indicated in equation (2) above. The dependent variable in all cases is the log of the expected odds of being in one category of the dependent variable vs. being in the other category, conditional upon given values of the independent variables. In the case of neonatal and postneonatal mortality, the dependent variables are the logarithms of expected death rates, since the two categories correspond to deaths and births. For all other equations, no one has yet died, and thus the sample consists only of births.

Maximum likelihood estimates for these equations are presented in Figure 1 and Table 2. Figure 1 only includes coeffi-

cients which test significantly different from zero at $\alpha = .05$.³

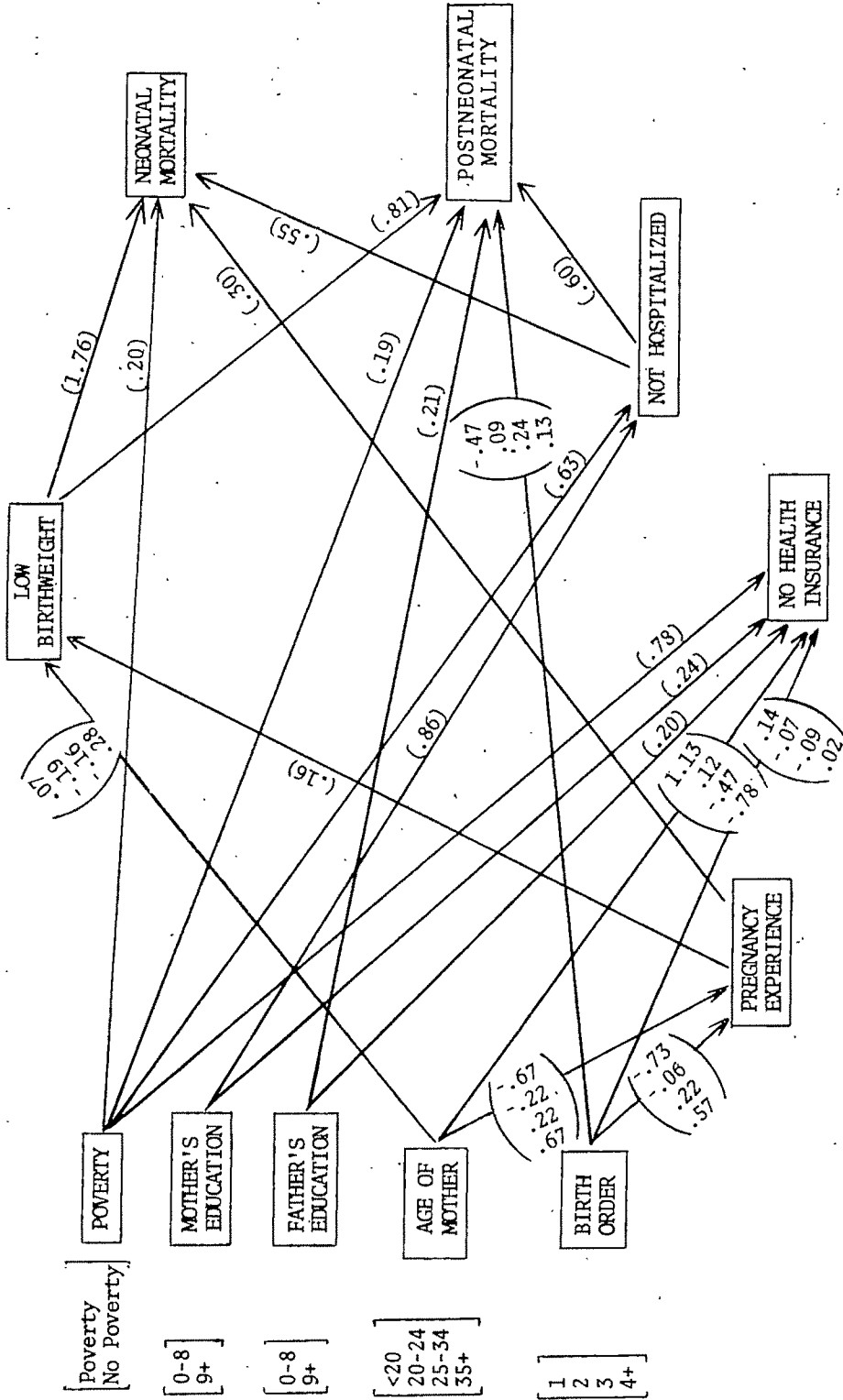
The overall fit a regression equation is characterized by an R^2 statistic. Researchers analyzing infant mortality with regression models have noted with disdain the low R^2 's produced, the inference being that a low R^2 means the model has little explanatory power (see e.g., Institute of Medicine, 1973: 63-4). Regression equations predicting neonatal mortality from the present data set, for example, have R^2 's of approximately .44. Postneonatal mortality is more difficult to predict with an R^2 of approximately .06. Goodman (1972) has developed an R^2 statistic for use with the discrete logistic model; this R^2 statistic for the equation predicting neonatal death is approximately .75; the postneonatal equation produces a statistic of .20.

Given that most of the explained variance in the equation predicting neonatal death is accounted for by the birth weight variable, these R^2 statistics thus indicate a moderate to poor amount of predictive precision, and reaffirm the difficulty of predicting precisely who will die given only background characteristics of infants. The analyses that follow will not dwell upon this lack of precision, but rather will focus upon identifying factors related to the greatest changes in the probability of death; our emphasis is thus upon relative risk.

7. CAUSAL ANTECEDENTS OF INFANT DEATH

The estimates in Figure 1 and Table 2 indicate that income poverty, as defined here, is a major antecedent of lack of health insurance among the white population of infant's parents. When other factors in the model are controlled for, poverty status leads to a five-fold increase ($e^{2.78} = 5.0$) in the chances of a family not possessing health insurance over those families not in poverty. Likewise, poverty status of the family leads to a

³ The significance tests are not adjusted to take into account the large number of tests made.



^a N = 6,185 births, and 878 neonatal and 303 postneonatal deaths. All effects (or set of effects) shown are significantly different from zero at $\alpha = .05$.
Figure 1. Coefficient Estimates of Factors Affecting Neonatal and Postneonatal Mortality among White, Legitimate Infants in the United States in 1964-1965^a

tripling of the odds of the infant not being born in a hospital over families not in poverty.

These findings support the well-accepted notion that access to health care in the United States (in 1964-65) is structured significantly by a lack of monetary resources. It is also of interest to note that the largest effects upon possession of health insurance are those associated with young age of the mother. These estimates should be tempered, however, with knowledge of the number of individuals implicated in these associations. Only an estimated 1.6% of all births during the study period, for example, did not occur in a hospital.

No statistically significant direct effects of poverty or education of parents upon birth weight are found. The possession of health insurance, however, exhibits an effect significant at the .10 level. The magnitude of this effect indicates that lack of insurance for physician and hospital care leads to a 22% increase in the odds of a mother having a low birth-weight infant. This finding supports a theory that health care—and in particular, prenatal care—may be instrumental in lowering rates of low birth weight, as the positive effect of prenatal care in reducing the risk of low birth weight has been indicated in other studies (Institute of Medicine, 1973; Gortmaker, 1979).

Coefficients similar in sign, but smaller in magnitude, likewise characterize the partial relationships of poverty and education of parents to birth weight; the statistical insignificance of these effects, however, precludes discussion of their role in structuring the risk of low birth weight. In contrast, the differentials in risk associated with age of the mother and the mother's previous pregnancy experience are large. Both of these latter findings are consistent with previous research (O'Sullivan et al., 1965) although, as noted earlier, the observed relationship between young age of mother and low birth weight may reflect a relationship between low prepregnant weight of the mother and low birth weight of the infant, and this relationship in turn also may reflect a lack of prenatal care.

8. DETERMINANTS OF NEONATAL AND POSTNEONATAL DEATH

The largest estimated effects upon both neonatal and postneonatal mortality, as expected, are those associated with low birth weight of the newborn infant. Only a small indirect relationship between poverty and low birth weight, however, was detected. In contrast, significant direct relationships between income poverty and both neonatal and postneonatal mortality are indicated. The magnitudes of the estimated coefficients indicate that being born into income poverty vs. not being born into income poverty increases an infant's risk of death by almost 50%—both in the neonatal and postneonatal periods. These results imply that the largest effects of poverty upon infant death are related to the environment of the newborn, and to a lesser extent to the prenatal environment.

Nonhospitalization of the infant at the time of birth is quite strongly associated with both neonatal and postneonatal death, as indicated in Figure 1. Since nonhospitalization exhibits equally large effects upon both neonatal and postneonatal death, however, more than the mere fact of nonhospitalization is probably being measured. This variable might be indicative of a general lack of any medical care. Although the effects associated with nonhospitalization are large and statistically significant, relatively few deaths will be associated with poverty via this route because of the small number of births not delivered in a hospital. Although the number of deaths involved would thus have little impact upon national rates, this finding does illustrate one extreme effect of poverty as it relates to infant death.

Low education of the father is another factor significantly associated with an increased risk of postneonatal death, indicating the role that nonfinancial characteristics of stratification can assume. In addition, the estimated effects of a large family size upon postneonatal death are larger than any of the estimated effects of poverty or education. This fact indicates the significant impact that reduced family size might have upon infant mortality.

In summary, our analysis of the structural equations predicting infant death supports many results indicated in other studies of infant mortality in the United States. One somewhat unexpected, but important finding concerns the extent to which poverty is related to infant mortality indirectly via low birth weight, and the extent to which poverty is related to infant mortality independently of the infant's birth weight. The largest effects of poverty estimated were direct, and these indicate the particular vulnerability of the newborn to a life of poverty.

9. INTERACTIONS AND MISSPECIFICATIONS

Thus far, it implicitly has been assumed that the estimated effects of poverty upon infant death are the same across all categories of the other variables. Tests of this assumption were constructed: first, all nonsignificant main effects were dropped from the equations predicting neonatal and postneonatal mortality. Second, all second-order interactions (two-way) which tested significantly different from zero were added to the main effects model. The significance tests for these interactions are given in Tables 3 and 4.

Finally, a best fitting equation was estimated by dropping those interactions which did not test significantly different from zero. The coefficient estimates for these equations are given at the bottom of Tables 3 and 4.

The estimated interactions in the equation predicting neonatal mortality indicate that a model strictly multiplicative in the probabilities does not quite fit the data. In substantive terms, this means that babies born to mothers in poverty, with a previous history of pregnancy problems, do not fare as badly as one would think, given the separate effects of poverty and previous pregnancy experience. Similarly, low birth-weight babies born to poor mothers experience a lesser risk of neonatal death than the separate poverty and birth-weight effects, when multiplied together, might indicate. These interactions indicate that a low birth-weight infant born to a family in poverty, or an infant born into poverty whose mother experienced previous pregnancy loss, does not experience negative effects of poverty during the neonatal period. Because previous pregnancy loss and low birth weight are two of the most important risk factors in infant death and both are easy to identify clinically (most

Table 3. Significance Tests for Interactions, and Coefficient Estimates for Final Model Predicting Neonatal Mortality among the Population of White, Legitimate Births, United States, 1964-65

χ^2 Significance Tests For Individual Interactions:								
Age of Mother	4.56(3)							
Birth Order	2.62(3)	11.37(9)						
Pregnancy Experience	7.39(1)	.74(9)	3.42(3)					
Low Birth Weight	4.10(1)	12.73(3)	1.92(3)	2.37(1)				
Not Hospitalized	.00(1)	.88(3)	4.39(3)	1.61(1)	.02(1)			
	Poverty	Age of Mother	Birth Order	Pregnancy Experience	Low Birth Weight			
Coefficient Estimates: Final Model								
Poverty	Age of Mother	Birth Order	Pregnancy Exper.	Low Birth Weight	Not Hospitalized	Poverty x Preg.	Poverty x Birth WT	Age of Mother x Birth WT
.15	.08	-.05	.20	1.66	.51	-.17	-.12	.22
	-.03	.13						.12
	-.06	.01						.03
	.02	-.10						-.37
						(8.15)**	(4.24)*	(14.46)**

* = Interaction significant at .05.

** = Interaction significant at .01.

Table 4. Significance Tests for Interactions, and Coefficient Estimates for Final Model Predicting Postneonatal Mortality among the Population of White, Legitimate Births in the United States, 1964-65

χ^2 Significance Tests for Individual Interactions:							
Mother's Education	3.51(1)						
Father's Education	.17(1)	.64(1)					
Age of Mother	1.64(3)	1.73(3)	2.85(3)				
Birth Order	1.55(3)	3.76(3)	7.25(3)	5.66(9)			
Low Birth Weight	.04(1)	.21(1)	.52(1)	.55(3)	8.84(3)*		
Not Hospitalized	.79(1)	1.02(1)	2.14(1)	5.92(3)	4.31(3)	1.36(1)	
	Poverty	Mother's Education	Father's Education	Age of Mother	Birth Order	Low Birth Weight	
Coefficient Estimates: Final Model							
	Poverty	Mother's Education	Father's Education	Age of Mother	Birth Order	Low Birth Weight	Birth Order x Low Birth Weight
	.21	.15	.22	.42	-.32	.81	.32
				.06	-.06		-.28
				-.16	.20		-.11
				-.33	.19		.06
							(8.84)*

* = Interaction significant at .05.

birth certificates in the United States collect this information), this result implies that such high-risk, poor children are being well cared for by our hospitals. Neonatal intensive care units are organized throughout the United States, and may be responsible for some of this effect (Institute of Medicine, 1973). These interactions also indicate, however, that poverty is related to particularly high levels of neonatal mortality if poor children are not identified as high risk.

In contrast, no attenuation in the effects of poverty upon high-risk infants are found during the postneonatal period (see Table 4). Even high-risk infants would be out of the hospital during this period, and thus subject to the outside environment, including all of the negative consequences associated with a household in poverty. These findings lend support to an often stated characteristic of medical care for children in the United States: differences in the care received by poor and wealthier children tend to be

... least pronounced in the area of tertiary care (which is the most highly specialized

and sophisticated treatment) because major medical centers usually provide for rich and poor alike when health problems have become critical or complex.

It is outside the hospital setting that the system breaks down, especially for the poor, and most especially for children . . . (Keniston et al., 1977:156-7)

Other significant interactions predict that low birth-weight infants who are firstborn (Table 4) and who are born to young mothers (Table 3) tend to experience particularly great mortality.

Finally, given the nonexperimental nature of the present research, the exclusion of variables from analysis which are related to both poverty and infant mortality could have biasing effects upon estimated relationships. A number of such possibilities are discussed below, along with an assessment of the effect of their exclusion upon coefficient estimates; no evidence of serious bias, however, is found.

One variable thus far excluded from analysis is the urban/rural character of the infant's home. Rural families are further

removed from access to health care than their urban counterparts and furthermore, the definition of poverty used does not make an urban/rural distinction. Part of the poverty effect observed thus might be due to the consequences of rural living, rather than to a lack of income. To test for this possibility, we dropped the insurance variable from the equation predicting neonatal mortality (because of limitations in the computer program) and added a residence variable, which indicates whether or not the infant's parents reside in a Standard Metropolitan Statistical Area. As expected, a significant residence effect was found, indicating the negative influence of a rural situation. The estimated effect of poverty, however, is only slightly attenuated and still significantly different from zero.

Prenatal care, the height and stature of the mother, and her smoking behavior are other factors often related to the increased risk of infant death, yet not measured in the present study. Their influence, however, appears to operate via low birth weight of the infant (Gortmaker, 1979; O'Sullivan et al., 1965; Fielding and Yankauer, 1978a) and thus their exclusion should not significantly bias the effects of poverty estimated in the present research, since birth weight is controlled.

10. SUMMARY AND CONCLUSIONS

The present analysis of infant mortality differentials in the United States provides evidence to support a number of commonly stated beliefs: within the white population of legitimate births in 1964-65 in the United States, poverty status of a family is associated with substantial differences in both neonatal and postneonatal mortality. After adjustments are made for the effects of the variables, education of mother, education of father, age of mother, birth order of the child, the mother's previous pregnancy experience, health insurance held by the family, birth weight of the infant, and whether the child was hospitalized at the time of birth, the fact of poverty is associated with a relative risk of both neonatal and postneonatal death almost 50% greater than that experienced by infants not born in poverty.

Before controlling for the effects of other variables, the relative risks of neonatal and postneonatal death associated with poverty are 1.6 and 2.3 (see Table 1). The neonatal relative risk thus is changed little by the imposition of controls, while the postneonatal relative risk changes more substantially. The moderate attenuation in both of these relative risks indicates the effect of controlling a variety of theoretically important and correlated variables in our analysis.

The estimated direct effects of poverty discussed above are substantially larger than the estimated effects of poverty mediated by the birth weight of the infant. Thus, although care of the mother and infant during the prenatal period is important for disadvantaged populations (Institute of Medicine, 1973; Gortmaker, 1979), poverty still, in a variety of more direct ways, exerts a substantial effect upon the well-being of the newborn.

One significant variation detected in the association between poverty and infant mortality occurs among high risk babies during the neonatal period. Such babies who are poor do not appear to suffer any additional risk when contrasted with the nonpoor. This attenuation in risk is interpreted as an effect of generally excellent neonatal hospital care. A similar attenuation, however, is not found during the postneonatal period.

The data concern 1964-65, and social programs in the United States during the ensuing decade have been aimed at eliminating poverty ("The War on Poverty"), and at more equitably distributing health care to mothers and infants (Medicaid, and Maternal and Infant Health Programs). Despite the initiation of these programs, however, differential distributions of scarce resources such as income and health care persist. Recent data on changes in poverty in the United States, for example, indicate that in 1965 "25.5% of U.S. households were poor before taking account of government transfers. Over the whole period from 1965 to 1972, the incidence of household pretransfer poverty dropped by less than one percentage point" (Plotnick and Skidmore, 1975:170). When government transfers (which includes Medicaid and

Maternal and Infant Care projects money) are taken into account, it is estimated that in 1965, 16.5% of the population lived in posttransfer poverty households, while in 1972 this incidence changed to 11.9% (Plotnick and Skidmore, 1975:174).

Although Davis (1977) provides evidence pointing to the effectiveness of Maternal and Infant Care projects in reducing neonatal mortality, less than 13% of the population of live births is represented in these programs, and these include substantial numbers of nonpoor families (Davis, 1977:226). Lack of comprehensive prenatal care may be noted as a persistent problem in the United States over the last decade: national vital statistics data for 37 states and the District of Columbia indicate that the percentage of mothers receiving late (third trimester) or no (or not stated) prenatal care was 12.8% in 1969, and 9.5% in 1973. The corresponding percentages among the black population were 23.5% and 16.4%.

Financial barriers to the receipt of such prenatal care are still significant. As of July 1, 1974, for example, 20 states did not provide prenatal care under Medicaid to first pregnancy mothers (U.S. Department of Health, Education, and Welfare, 1974), and this particular situation has persisted to the present day.

Thus, poverty and inadequate and fragmented health services for poor mothers have persisted over the last decade, and it seems likely that infant mortality differentials—as well as their reproduction via a stratified system of personal resources—likewise will change only slowly. Infant mortality rates have declined significantly in the United States during the last decade, but current estimates of infant mortality differentials by poverty status are not available. In this respect, it is hoped that estimates of relationships obtained with the present data prove useful as baseline data for future studies.

Two distinct yet related policies might be followed to reduce the differentials indicated in the present analysis. First, free and comprehensive health care could be provided to all pregnant mothers and the newborn. The social costs of such a program would not be large; in fact, the

amount spent upon child health resources per capita in the United States is considerably less than that spent upon the adult population, and utilization of these services have not shown the tendency to increase as have adult use patterns (Haggerty et al., 1975).

Second, the more general functioning of families can be supported through the provision of job opportunities and income supports. As Kitagawa (1977) has noted, such improvement of socioeconomic conditions among disadvantaged groups in the population holds the possibility of achieving greater gains in mortality reductions than advances in medical knowledge.

APPENDIX

DEFINING INCOME POVERTY

Income poverty guidelines are based upon those published by the Community Services Administration (1975). The original criteria were adjusted for changes in the standard of living between 1965–75, as reflected in changes in the Consumer Price Index (Community Services Administration, 1975:1–2).

Two changes in definition were made to better suit the research reported here: (1) Since farm-nonfarm family status was not an item asked in the follow-back surveys, all respondents were classified as either in or out of poverty upon the basis of nonfarm guidelines. (2) The income guidelines were adjusted downward because the follow-back survey coded total family (pretax) income into categories (i.e., \$3,000–\$3,999). The lower 15% of the population studied thus was classified as being in poverty—perhaps better termed *extreme* poverty. These guidelines (in 1965 dollars) are listed below:

Family Size	Family Income
1 or 2	less than \$1,000
3 or 4	\$1,000–\$1,999
5 or 6	\$2,000–\$2,999
7 or 8	\$3,000–\$3,999
9–12	\$4,000–\$4,999
13 or more	\$5,000–\$6,999

REFERENCES

- Anderson, Odin W.
1958 "Infant mortality and social and cultural factors: historical trends and current patterns." Pp. 10–24 in E. Glaty Jaco (ed.), *Patients, Physicians and Illness*. New York: Free Press.
- Antonov, A. N.
1947 "Children born during the siege of Leningrad in 1942." *Journal of Pediatrics* 30:250.

- Antonovsky, A.
1967 "Social class, life expectancy, and overall mortality." *Milbank Memorial Fund Quarterly* 45:31-73.
- Apgar, Virginia, ed.
1970 "Down's Syndrome (Mongolism)." *Annals of the New York Academy of Sciences* 171:303-688.
- Benjamin, B.
1965 *Social and Economic Factors Affecting Mortality*. Paris: Mouton.
- Bishop, Yvonne M., and Frederick Mosteller
1969 "Smoothed contingency-table analysis." Pp. 237-87 in John P. Bunker, M. D., William H. Forrest, Jr., M.D., Frederick Mosteller, Ph.D., and Leroy D. Vandam, M. D. (eds.), *The National Halothane Study*. Washington, D.C.: U.S. Government Printing Office.
- Bishop, Yvonne M., Stephen E. Feinberg, and Paul W. Holland
1975 *Discrete Multivariate Analysis: Theory and Practice*. Cambridge, Ma.: MIT Press.
- Chase, Helen
1964 *The Relationship of Certain Biologic and Socioeconomic Factors to Fetal Infant and Early Childhood Mortality*. Pt. 1. Washington, D.C.: The Children's Bureau.
- Children's Bureau
1921 *Children's Bureau Publication No. 61*. Rev. Washington, D.C.: U.S. Department of Labor.
- Community Services Administration
1975 *CSA Income Poverty Guidelines*. Rev. CSA Instruction No. 6004-1g. Washington, D.C.: Community Services Administration.
- Davis, Karen
1977 "A decade of policy developments in providing health care for low-income families." Pp. 197-231 in Robert H. Haveman (ed.), *A Decade of Federal Antipoverty Programs*. New York: Academic Press.
- Department of Health and Social Security
1970 "Confidential inquiry into postneonatal deaths, 1964-1966." *Reports on Public Health and Medical Subjects*. No. 125. London: Her Majesty's Stationery Office.
- Duncan, Otis D.
1966 "Path analysis: sociological examples." *American Journal of Sociology* 72: 1-16.
- Fielding, Jonathan E., and Alfred Yankauer
1978a "The pregnant smoker." *American Journal of Public Health* 68:835-6.
1978b "The pregnant drinker." *American Journal of Public Health* 68:836-8.
- Fuchs, Victor R.
1974 *Who Shall Live? Health, Economics and Social Choice*. New York: Basic Books.
- Goldberger, Arthur S.
1964 *Econometric Theory*. New York: Wiley.
- Goodman, Leo A.
1972 "A modified multiple regression approach to the analysis of dichotomous variables." *American Sociological Review* 37:28-46.
1973a "The analysis of multidimensional contingency tables when some variables are posterior to others: a modified path analysis approach." *Biometrika* 60:179-92.
- 1973b "Causal analysis of data from panel studies and other kinds of surveys." *American Journal of Sociology* 78:1135-91.
- Gortmaker, Steven
1977a *Stratification, Health Care, and Infant Mortality in the United States*. Ph.D. dissertation, Department of Sociology, University of Wisconsin, Madison.
1977b *Poverty, Race and Infant Mortality in the United States*. Institute for Research on Poverty Discussion Paper #404-77. University of Wisconsin, Madison.
1979 "Prenatal care and the health of the newborn." *American Journal of Public Health*. In press.
- Gruenewald, P.
1974 "Pathology of the deprived fetus and its supply line." Pp. 3-19 in *Size at Birth*, Ciba Foundation Symposium 27. New York: Associated Scientific Publishers.
- Gruenewald, P., H. Funakawa, S. Mitani, T. Nishinina, and S. Takenchi
1967 "Influence of environmental factors on foetal growth in man." *Lancet* i:1026-9.
- Habicht, J. P., C. Yarbrough, A. Lechtig, R. E. Klein
1974 "Maternal nutrition, birth weight and infant mortality." Pp. 353-70 in *Size at Birth*, Ciba Foundation Symposium 27. New York: Associated Scientific Publishers.
- Haggerty, R. J., K. J. Roghmann, I. B. Pless
1975 *Child Health and the Community*. New York: Wiley.
- Institute of Medicine, National Academy of Sciences
1973 "Infant death: an analysis by maternal risk and health care." David M. Kessner (ed.), *Contrasts in Health Status*, Vol. 1. Washington, D.C.: Institute of Medicine.
- Keniston, Kenneth and the Carnegie Council on Children
1977 *All Our Children: The American Family Under Pressure*. New York: Harcourt Brace Jovanovich.
- Kitagawa, Evelyn M.
1977 "On mortality." *Demography* 14:381-9.
- Kitagawa, Evelyn M. and P. M. Hauser
1973 *Differential mortality in the United States: a study in socioeconomic epidemiology*. Cambridge, Ma.: Harvard University Press.
- Lampman, Robert J.
1971 *Ends and Means of Reducing Income Poverty*. Chicago: Markham.
- MacMahon, Brian, Thomas Pugh, and Johannes Ipsen
1960 *Epidemiological Methods*. Boston: Little, Brown.
- Marx, Karl
[1867] *Capital: A Critique of Political Economy*. Volume 1 of Frederick Engels (ed.), *The Process of Capitalist Production*. Trans. Samuel Moore and Edward Aveling. New York: International Publishers.

- Mechanic, David
1968 *Medical Sociology: A Selective View*. New York: Free Press.
- Morris, J. N., and J. A. Heady
1955 "Social and biological factors in infant mortality." *Lancet* 12:343-9.
- National Center for Health Statistics
1972 *Infant Mortality Rates: Socioeconomic Factors*. Ser. 22. No. 14. Washington, D.C.: U.S. Government Printing Office.
1973 *Infant Mortality Rates: Relationships with Mother's Reproductive History*. Ser. 22. No. 15. Washington, D.C.: U.S. Government Printing Office.
- National Office of Vital Statistics
1920- *Vital Statistics of the United States*. Washington, D.C.: U.S. Government Printing Office.
1975
- Neligan, G. A., I. Kolvin, D. M. Scott, R. F. Gar- side (eds.)
1976 *Born Too Soon or Born Too Small*. Philadelphia: Lippincott.
- Nerlove, Marc, and James S. Press
1973 *Univariate and Multivariate Log-Linear and Logistic Models*. Santa Monica: Rand.
- O'Sullivan, J. B.
1965 "Aspects of birth weight and its influencing variables." *American Journal of Obstetrics and Gynecology* 92:1023-9.
- Plotnick, Robert D., and Felicity Skidmore
1975 *Progress Against Poverty: A Review of the 1964-1974 Decade*. New York: Academic Press.
- Rush, D., H. Davis, and M. Susser
1972 "Antecedents of low birth weight in Harlem, New York City." *International Journal of Epidemiology* 4:375-87.
- Shah, Farida K. and Helen Abbey
1971 "Effects of some factors on neonatal and postneonatal mortality." *Milbank Memorial Fund Quarterly* 49:33-57.
- Shapiro, Sam, Edward R. Schlesinger, and Robert E. L. Nesbitt, Jr.
1968 *Infant, Perinatal, Maternal, and Childhood Mortality in the United States*. Cambridge, Ma.: Harvard University Press.
- Slesinger, Doris P.
1973 *The Utilization of Preventive Medical Services by Urban Black Mothers: A Socio-Cultural Approach*. Ph.D. dissertation, Department of Sociology, University of Wisconsin, Madison.
- Slesinger, Doris P., and Harry P. Travis
1975 *A Study of Infant Mortality in Wisconsin, 1969, from Linked Birth and Death Records: An Application of Log-Linear Models*. Working Paper No. 75-15. Madison: University of Wisconsin Center for Demography and Ecology.
- Smith, C. A.
1947 "The effect of wartime starvation in Holland upon pregnancy and its product." *American Journal of Obstetrics and Gynecology* 53:599.
- Stockwell, Edward G.
1962 "Infant mortality and the socio-economic status: a changing relationship." *Milbank Memorial-Fund Quarterly* 40:101-11.
- U.S. Department of Commerce
1974 *Statistical Abstract of the United States*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Health, Education, and Welfare
1974 *Characteristics of State Plans for Aid to Families with Dependent Children under the Social Security Act Title IV-A*. Washington, D.C.: U.S. Government Printing Office.
- Vaughan, Victor C. and R. James McKay
1975 *Textbook of Pediatrics*. Philadelphia: Saunders.
- Willie, Charles V.
1959 "A research note on the changing association between infant mortality and socio-economic status." *Social Forces* 37:222-5.
- Willie, Charles V., and William B. Rothney
1962 "Racial, ethnic, and income factors in the epidemiology of neonatal mortality." *American Sociological Review* 27:522-6.

ERRATUM

An error occurred in the article, "Occupational Sex Identification" by Steven D. McLaughlin (ASR December, 1978). The Blau and Jusenius (1976) entry in the reference appendix is incorrect. It should read:

- Blau, Francine D. and Carol L. Jusenius
1976 "Economists' approaches to sex segregation in the labor market: an appraisal." Pp. 181-200 in Blaxall and Reagan (eds.), *Women and the Workplace*. Chicago: University of Chicago Press.

ATTITUDE AND BEHAVIOR: A SPECIFICATION OF THE CONTINGENT CONSISTENCY HYPOTHESIS*

KENNETH H. ANDREWS
Columbia University

DENISE B. KANDEL
*Columbia University,
New York State Department of Mental Health*

American Sociological Review 1979, Vol. 44 (April):298-310

The paper tests the contingent consistency hypothesis that social pressures reinforce the effect of attitude on behavior. The attitudes and behaviors pertain to marihuana use; the contingent effects tested are those of parents and peers. The data derive from a large-scale two-wave panel sample of high school students. By decomposing the sample according to the adolescents' specific position in the developmental continuum from marihuana nonuse to initiation to continued use, we identified the conditions under which the hypothesis is supported. No contingent effects appeared over time. Reinforcement of the effect of attitude by social pressures characterized adolescents in the second survey who had shifted from being nonusers to becoming frequent users over the six-month follow-up interval. By contrast, group norms did not interact with attitude to affect simple initiation to marihuana use or continuing marihuana use. Peer-related norms had the greatest interactive impact; parental norms had very little impact. Decomposition of a cohort according to stages of participation in a behavioral sequence made it possible to specify when in that sequence contingent consistency is most likely to appear.

The nature of the relationship between attitudes and behaviors has been the subject of recurrent controversy (see reviews by Schuman and Johnson, 1976; Liska, 1974a; Wicker, 1969; Deutscher, 1973). At issue is the observation that self-reported attitudes often have low correlations with the behaviors they are expected to predict. Many attempts have been made to explain inconsistency between attitude and behavior.

In recent years, most explanatory efforts have revolved around the contingent consistency hypothesis, which assigns a crucial role to situational variables in evaluating the observed relationships between attitudes and behavior (Acock and DeFleur, 1972; Clayton, 1972). It is suggested that attitudes do not predict a particular behavior under all circumstances, since there are almost always

situational forces working for and against behavioral realization of the attitudes. The situations are social and refer primarily to perceived group norms. Held by significant others and expressed either verbally or in actions, norms may reinforce or inhibit the effects of attitudes on behavior. Thus, it can be hypothesized that a person will not necessarily behave in a certain way either when holding an attitude or when experiencing social pressure favorable to the behavior, but generally will do so when individual attitude and group norms are mutually reinforcing. Reinforcement of attitude by social pressures implies group differences such that the effect of attitude among individuals experiencing social pressures will differ significantly from its effect among those experiencing little or no social pressure. In a multiple regression framework, group differences are expressed by interaction terms. For this reason, contingent consistency logically requires the presence of significant statistical interactions. That is, it must be demonstrated that the positive effects of attitudes on behavior will be increased in situations that are themselves favorable to the behavior.

However, the contingent consistency

* Address all communications to: Denise Kandel; 722 West 168th St.; New York, NY 10032.

This research is partially supported by research Grant No. DA00064 from the National Institute on Drug Abuse, and the Center for Socio-Cultural Research on Drug Use, Columbia University. We would like to thank Michael Bucuvalas, Mark Davies, and anonymous reviewers from this journal for their helpful comments and suggestions.

hypothesis has been ambiguously formulated in the literature. In the original formulation by Warner and DeFleur (1969), the statistical tests implied by the hypothesis were not clearly outlined. The authors only stressed that variables that are related both to attitude and behavior may modify the underlying attitude-behavior relationship. Subsequent arguments have revolved around the specific statistical effects implied by the hypothesis, i.e., whether it is supported simply by additive effects of situational variables or whether it requires the identification of interaction effects. There also has been disagreement about the interpretation of the statistical results that have been reported. Clayton (1972:273) concludes in a study of premarital sexual intercourse that he found "considerable evidence to support an additive contingent consistency model." However, Acock and DeFleur (1972:716) and their critics (Susmilch et al., 1975), as well as Liska (1974b), appropriately stress the theoretical importance of significant interactive effects. The results of Acock and DeFleur (1972), on the other hand, have been reanalyzed and criticized for showing only additive effects (Susmilch et al., 1975). Although Liska (1974b) reported a statistically significant interaction between attitude and reference group support in a reanalysis of Fendrich's (1967) data, Schuman and Johnson (1976) were unable to replicate this result using a different analytical technique. After reviewing many existing studies, Schuman and Johnson (1976) concluded that the best evidence thus far did not establish that interaction terms increased the variance in behavior explained by attitudinal and situational variables.

In this paper, we suggest that a respecification of the behavior measure would help reconcile some of the inconsistent findings in the field and would establish when the hypothesis holds. This is a respecification in terms of the specific behavioral stages characterizing a sample, particularly whether the behavior under study is ongoing or just being initiated. All analyses to date have been carried out either on a cross section of respondents interviewed at a single point in time, or on a sample in which attitude is measured

once and behavior is measured independently a short time later. These samples are what we would call "behaviorally aggregated," i.e., they include individuals at various stages of participation in a particular behavioral sequence. These behavioral stages may vary from nonparticipation to initiation, continued participation, or cessation. Attitudes and situations may play different roles at these various stages. The literature on behavioral commitment, for example, suggests that normative expectations can have a stronger impact on the continuation of a behavior than on its initiation, because such expectations often form only after the behavior has begun (Johnson, 1973:397-8). In Johnson's illustration, significant others may hold no preexisting expectations that a person carry out acts of daring, but norms against "chickening out" may subsequently develop. This does not necessarily imply that the interactive effects of expectations will be stronger for continuing behavior than for initiation. The effects of social norms could be largely independent of attitudes. This becomes a matter of empirical test. Such a test is the object of the present paper.

Adolescent use of marihuana, a relatively salient behavior for most young people, is the behavior under study. First, analyses are carried out on an aggregated cross-sectional sample. Subsequently, separate analyses of ongoing vs. newly initiated behaviors are made in a decomposed longitudinal sample in an attempt to disentangle the interactive roles of attitudes and situations in these two different behavioral phases. The results allow us to estimate the contribution made by each behavioral group, i.e., adolescents already identified as users at an earlier period vs. new users, to the attitude-behavior relationship observed in a cross section of respondents. In testing the contingent consistency hypothesis, we consider the norms and social pressures from the two most important socialization influences in adolescence, namely, parents and peers (Clausen, 1968; Kandel and Lesser, 1972). In our own work, we have documented the important role of peers in marihuana use. We have found that peer norms are important correlates of

marihuana use (Kandel, 1973) and are strong predictors of initiation into marihuana use (Kandel et al., 1978). It is well-known, from research that we ourselves as well as others have carried out, that the use of illicit drugs shows very strong intergenerational differences. Parents and peers subject adolescents to conflicting norms regarding its use. Epidemiological studies have documented the striking differences in rates of marihuana use in different age groups in the population. In the most recent survey (Abelson et al., 1977), 38% of 14-17 year olds report ever having used marihuana as compared with 7% of adults 35 years old and over. Similarly, 24% of 14-17 year olds report highly favorable attitudes toward marihuana (e.g., believe that it is harmless and favor no imprisonment for convicted users) in contrast to 14% of adults 35 years old and over (Abelson and Fishburne, 1976).

Parents and peers also differ in the extent to which the adolescent's marihuana use is visible to them. In our own sample, we find that most students who use marihuana report doing so with friends (59%) and without the knowledge of their parents (66%). Friends are therefore in a much better position to apply sanctions to the behavior when it does not comply with their expectations. Students can satisfy contradictory group norms of parents and friends by smoking marihuana with their friends outside the control of their parents. For this reason, we infer that peer expectations should reinforce adolescent attitudes more strongly than do parental expectations.

The particular analytical strategy we have pursued involves the disaggregation of a two-wave longitudinal sample. This has made it possible to specify the potential contribution of distinct component groups to results obtained in a regular cross section of respondents. In addition, analyses on the various subgroups, defined by information obtained at the two different time points, created a synthetic cohort that approximated the processes to be observed in a longitudinal cohort followed over the various phases of marihuana involvement, from nonuse to initiation to longstanding involvement.

METHOD

Sample

The analyses are based on a two-wave panel survey carried out on a multiphasic random sample of students attending public high schools in New York State during the school year 1971-1972 (Kandel et al., 1976). Questionnaires were administered to students in 18 schools at the beginning and end of the school year 1971-1972 at an interval of five to six months. Usable questionnaires were obtained from 8,206 adolescents at Time 1, a response rate of 81%, and 7,250 at Time 2, a response rate of 76%. The samples were weighted to reflect the variable probabilities of selection of schools and homerooms and the response rate of each school.

To protect the rights of participants in the research, no respondent signed any of the questionnaires. Identification and linkage of records between waves was accomplished through self-generated identification code numbers.¹ Using these codes, 66% of all students at Time 1 could be matched to themselves at Time 2 to constitute the T1-T2 panel sample. To correct for biases introduced by the loss of respondents from the panel, the T1-T2 panel sample was weighted ($N=5,258$) to reproduce the distribution of frequency of marihuana use observed at Time 1 in the total adolescent sample and compensate for the loss of certain users.

Measurement of Variables

Marihuana use was measured by two questions asking respondents how frequently they (1) had ever used marihuana,

¹ Matching on the basis of self-generated identification code numbers is a compromise procedure inferior to the use of names. Not only does it reduce the overall rate of matching, but it potentially introduces a bias in the resulting panel sample, since students who do not provide a correct code and cannot be matched are more likely to be drug users than those matched. Thus, 24% of the students who could be matched at Time 2 reported marihuana use at Time 1 compared with 41% of those not matched. Furthermore, the extent and frequency of use also are related to changes in use patterns over a period of time. The greater the frequency of marihuana use at Time 1, the greater the likelihood that the adolescent will remain a user.

and (2) had used in the 30 days preceding each of the surveys (current use). For the latter, a precoded item allowed six response categories, ranging from *not used* to *every day*. Initiation to marihuana use at Time 2 within the nonusing sample was coded as a dummy variable (1=continued abstinence at Time 2; 2=use of marihuana one or more times by Time 2).

Attitude toward marihuana was measured by an unweighted linear combination of three separate variables: attitudes about (1) whether marihuana should be legalized, (2) whether casual, or (3) whether regular use could cause serious physical or psychological harm. The loadings and communalities from a common factor analysis of the three variables supported the hypothesis that they represented a single underlying dimension, general attitude toward marihuana, as their face validity would suggest (Rummel, 1970). Reliability, as measured by Heise and Borhnstedt's (1970) omega, was .74 and .72 at Time 1 and Time 2, respectively.²

The two situational variables measured the extent to which norms in the adolescent's environment favored the use of marihuana. The peer-related variable was the adolescent's report of how many close friends used marihuana or hashish, with five categories ranging from none to all. We assumed that number of friends using marihuana was a fairly accurate measure of the pervasiveness of expectations in the peer environment favorable to marihuana use. The measure of parental norms was based on the adolescents' perceptions of parental tolerance toward marihuana use.

² Omega is a lower bound estimate of the true reliability. Generally, omega provides a closer estimate of the true value than Cronbach's alpha, except when the items in the composite are τ -equivalent (Smith, 1974:507). The formula is:

$$\Omega = 1 - \frac{\sum_{i=1}^n \sigma_i^2 - \sum_{i=1}^n \sigma_i^2 h_i^2}{\sum_{i=1}^n \sum_{j=1}^n \text{Cov}(x_i, x_j)}$$

where σ_i^2 is the variance of each item and h_i^2 is its communality. The denominator is the sum of all entries in the covariance matrix. Data for the scaling process are available on request from the authors. All reliability coefficients in this paper were obtained on the total weighted adolescent sample.

At Time 1, an additive index measured whether each parent is completely tolerant, tolerant only if the adolescent is trying it out, prefers nonuse but leaves the decision to the adolescent, or positively discourages or forbids use (two items; omega=.79). At Time 2, only the measure of perceived maternal tolerance was available.³ The correlation between the two items at Time 1 is .69. First-order interaction terms were constructed by multiplying the composite measure of marihuana attitude by each situational variable.

Five other variables, known to influence drug use from prior research, were included as control variables in the analyses to avoid biased estimates of the effects of the variables of interest. They were: closeness to father (four-item index; omega=.77); peer activity (five-item index; omega=.69); minor delinquency scale (seven-item index; omega=.88); political participation (single item); and number of classes cut (single item). These five variables were included because they represented the significant predictors of marihuana use, both in longitudinal and cross-sectional analyses, from among 14 subclusters of variables selected to measure the effects of intrapersonal, interpersonal and social variables on marihuana use (see Kandel et al., 1978). No interaction terms were constructed for these five variables, and their additive effects, although included in the equations, are not displayed in the accompanying tables.

³ It can be noted that peer norms were measured behaviorally and parental norms attitudinally. We were unable to use parallel measures of norms in the parental and peer environments for two reasons: (1) perceived parental marihuana use, which is parallel to the measure we employ for peers, is skewed so highly that it has insufficient variance for use in the analysis; (2) perceived peer approval of marihuana, which is parallel to the measure we employ for parents, was not present in the Time 2 data set. To ascertain whether the results reported below were an artifact of the way in which social norms were measured, we repeated the cross-sectional analysis reported in Table 1 on the Time 1 sample with parental and peer norms measured attitudinally. The relative effects of parental and peer pressures, both additive and interactive, were similar to those presented in Table 1 (data not presented). We believe that our results are not affected by the fact that peer pressures were operationalized behaviorally and parental pressures attitudinally.

Analytical Strategies

In order to isolate more precisely the effects of attitudes and situations on behavior, parallel analyses were carried out on an aggregated cross-sectional sample and on a longitudinal sample decomposed into the separate behavioral groups that comprise a population observed at one point in time. The short interval (five to six months) separating the two waves of data collection in the survey proved to be advantageous, since it permitted us to identify a population in the process of change and to measure predictors of change at a time closely preceding the change itself.

The analyses on the aggregated cross-sectional sample examined the whole range of marihuana behavior from nonuse to heavy use, as indexed by a quasimetric variable, frequency of current use. The cross-sectional analyses reported in this paper are based on the wave 2 sample for two reasons. A longitudinal analysis described below required that a statistical control for prior participation in the behavior be introduced. In addition, we needed to disaggregate a cross section of respondents into various behavioral groups on the basis of their history of marihuana use. The Time 2 cross-sectional sample was disaggregated into two major groups on the basis of the longitudinal information on marihuana use available from the Time 1 data: one group included adolescents who were nonusers at Time 1 ($N=3,725$); the second group included adolescents identified as users at Time 1 ($N=1,533$).

The identification of these two basic groups allowed us to examine the relationship between attitudes, situations and behaviors in four contrasting conditions: (1) prior to initiation, by examining Time 1 variables as predictors of Time 2 behavior among all Time 1 nonusers; (2) shortly after the opportunity for initiation had occurred, by examining the Time 2 predictors of marihuana use at Time 2 among all Time 1 nonusers; (3) during participation in the behavior, by examining the Time 2 predictors of marihuana use at Time 2 among all Time 1 users; and (4) among continuous users, by examining the Time

2 predictors of marihuana use at Time 2 among those Time 1 users who definitely used marihuana in the five to six month interval between Time 1 and Time 2. As we noted earlier, such a disaggregation makes it possible to identify those parts of the behavioral sequence when interactions between attitudes and norms are most likely to appear. Although we cannot predict with certainty at which point such interactions will be strongest, we expect, based on the concept of behavioral commitment (Johnson, 1973), that contingent effects will have their strongest impact on the continuation rather than on the initiation of a particular behavior.

RESULTS

Test for a Causal Order between Attitude and Behavior

The contingent consistency hypothesis assumes implicitly that attitudes are causally prior to behaviors, or at least that attitudes affect behaviors more than behaviors affect attitudes. This assumption can be questioned, since we know that when actions and attitudes are discrepant, the former can produce changes in the latter (Kelman, 1974). A partial test of the assumption was carried out with a cross-lagged path analysis of the two-wave panel sample (Heise, 1970). Frequency of marihuana use at Time 2 was regressed on both itself and the composite measure of attitude toward marihuana at Time 1, while attitude toward marihuana at Time 2 was regressed on the same two independent variables. The standardized autoregression coefficients of frequency of marihuana use and attitude over time are .57 and .65, respectively. The cross-lagged coefficient of attitude on behavior is about four times the size of the coefficient of behavior on attitude, i.e., .20 vs. .05, although both are statistically significant. The cross-lagged model has failed to disconfirm the presumed causal order of the variables in the contingent consistency hypothesis.

A Sample of Aggregated Behaviors: Extent of Marihuana Use

Cross-sectional analysis. The initial test of the contingent consistency hypoth-

Table 1. Additive and Interactive Multiple Regression Analyses Predicting *Frequency of Marihuana Use at Time 2* from *Time 2 Attitude toward Marihuana* and *Two Time 2 Situational Variables* (Total Adolescent Weighted Panel Sample, Time 1-Time 2: N=5,258)

Time 2 Predictors ^a	Additive Model ^b		Interactive Model	
	Standardized Coefficient*	Unstandardized Coefficient*	F ratio ^c	R ² increment ^d
Attitude toward marihuana	.14	(.07)	N.A.	N.A.
Number of friends using marihuana	.52	(.52)	826.1	.073
Parental tolerance of marihuana	.05	(.08)	9.0	.001
Additive R ² = .47				
Total R ² = .54				

^a The following five variables also were included as covariates in all the regressions: closeness to father, degree of peer activity, minor delinquency, political participation, and number of classes cut.

^b The coefficients below were estimated before the interaction effects were entered in the equation.

^c The F ratios apply to the coefficients for the interaction effects, not main effects.

^d The interaction effect for number of friends using marihuana appears in the equation before the interaction effect for parental tolerance of marihuana. Consequently, it is assigned the variance explained jointly by the two interaction effects.

* All coefficients are statistically significant ($p < .05$).

N.A. = not applicable.

esis involved examining the relationship between attitude and behavior at one point in time. The bivariate cross-sectional relationships between attitude toward marihuana and frequency of marihuana use are fairly high: .49 at Time 2, and .51 at Time 1. This is comparable to the correlation of .53 between attitude of college students toward marihuana and voting for its legalization in a mock election several weeks later reported by Acock and DeFleur (1972:720). Acock and DeFleur attributed the size of this correlation to the salience of marihuana for college respondents. The same explanation may hold for our sample of high school students. The first question to be addressed is whether the relationship can be increased still further with the addition of situational variables indexing reference group norms.

Frequency of marihuana use at Time 2 was regressed on attitude toward marihuana and the two situational measures, first in an additive model, and subsequently in a multiplicative model that included the first-order interactions between attitude and the situational variables. Both equations also included the additive effects of five control variables known to affect drug use.⁴ Results are

displayed in Table 1. As discussed earlier, the contingent consistency hypothesis is supported when the interaction terms significantly improve the fit of the equation. The F-test for each variable is of limited help in making this judgment, because the sample size is so large that almost any improvement, however slight, is statistically significant. Consequently, we have relied partly on the increase in the percentage of variance explained to identify meaningful statistical interaction.

Parental tolerance of marihuana has a fairly weak linear effect on frequency of marihuana use at Time 2. But the effect of number of friends using marihuana, as measured by the standardized partial regression coefficient, is three to five times as large as that of attitude. The effect of attitude, while clearly significant, is not large. The increased variance explained by the interaction terms collectively (7%) is statistically significant ($F=426.9$), as are the two individual interaction effects. Only the effect of attitude by number of friends using marihuana, however, is substantively important. The results appear to support the contingent consistency hypothesis. Norms in the peer group when favorable to marihuana use interact with a positive attitude toward marihuana to produce the highest rates of adolescent

⁴ Inclusion of these five variables alters the coefficients for the variables of interest, but only very slightly. For example, when the five control variables are excluded from the equation in Table 1, the

unstandardized regression coefficient for peers increases from .52 to .56. The one for attitude increases from .07 to .08.

marihuana use. The variable which amplifies the predictive power of adolescent attitudes for behavior describes peer as opposed to parental norms. This result is consistent with the greater visibility of marihuana behavior to peers than to parents.

Longitudinal analysis. The bivariate relationship over time between attitude toward marihuana and frequency of marihuana use is .50, which is of the same magnitude as the cross-sectional relationship. Most longitudinal studies of other behaviors, however, report zero-order correlations of behavior with attitudes which rarely exceed .30 and often fall short of it (Wicker, 1969:65).

The association of attitude and marihuana use at one point in time represents an instantaneous measurement of an ongoing reciprocal process. Many adolescents probably have been using marihuana for some time, so that the attitude may in part be determined by the behavior itself as well as be a cause of it. However, the cross-lagged regression analysis reported above indicates that attitudes affect behaviors more than vice versa. The longitudinal data provide an opportunity to examine the attitude-behavior relation while controlling for prior behavior at Time 1. The cross-sectional equations could be misspecified. Indeed, the situational variables and the interaction terms may reflect the continuity across time of frequency of marihuana use, because this variable is not present in the equation as a Time 1 predictor of itself at Time 2. Frequency of marihuana use at Time 1 was therefore added as a predictor in the equations reported in Table 1. If the main and interaction effects of the situational variables were spurious, they should disappear.

Although the increment in the explained variance due to both interaction effects declines from 7% of the total variance to 4%, it is still statistically significant ($F=296.3$). As in the preceding analysis, the interaction effect for number of friends using marihuana is by far the more important ($F=562.0$). Frequency of marihuana use at Time 1 has a strong net effect ($\beta=.43$) on itself at Time 2 and its inclusion reduces the net effect of number of

friends using marihuana. These results suggest that some of the interaction effects attributed to situational variables in cross-sectional analyses may in fact be accounted for by the continuity of the behavior over time. In general, however, the longitudinal analysis does not alter the conclusions drawn from the cross-sectional analysis in any major way: the interaction effect between attitude and peer norms is still substantively and statistically significant.

Disaggregated Sample: Initiation and Ongoing Behavior

In order to isolate more precisely the effects of attitudes and situations on behaviors, the analyses were carried out separately for the separate groups that comprise a population observed at one point in time. Two major groups were distinguished: (1) the group comprised of nonusers at Time 1, and (2) the group of students who were already using marihuana at Time 1. As noted earlier, this makes it possible to examine the relationships among attitudes, situations and behaviors in four cases: (1) prior to initiation, with Time 1 variables as predictors of initiation in the follow-up interval among Time 1 nonusers; (2) shortly after the opportunity for initiation has occurred, with Time 2 predictors of frequency of marihuana use at Time 2 among Time 1 nonusers; (3) during participation in the behavior, with Time 2 predictors of marihuana use at Time 2 among Time 1 users; and (4) among definite continuous users, excluding from Time 1 users those who had not reported any use between the two surveys since they could not be classified definitely either as continuing users or as stoppers. Predictors in the fourth analysis also are measured at Time 2. The first two sets of analyses are performed on the same respondents. The last analysis is performed on a subset of respondents included in the third. Comparison of the results for conditions (2) and (3) pinpoints which specific group contributes to the interactions observed in an aggregated cross-sectional sample.

Initiation into marihuana use: a new behavior. We could expect the clearest

test of the attitude-behavior relationship to appear when the attitude can be clearly measured before the appearance of the behavior. Onset of marihuana use provides such a test. In the first analysis carried out on the group of adolescents who were nonusers at Time 1, the behavior of interest was initiation. The dependent variable was the Time 2 dummy variable, initiation vs. noninitiation, and the predictors were attitude and situations measured at Time 1, with five factors known to affect marihuana use introduced as controls. Since initiation can occur only among adolescents who have never previously used marihuana, this procedure brings with it a built-in control for prior level of marihuana use. The zero-order correlation between attitude and initiation is .28. Table 2 displays the additive effects of attitude and the two situational measures, together with F ratios and R^2 increments for the corresponding interaction terms. Although both interaction terms are significant, this is largely a result of the large sample size rather than an improvement in the fit of the equation. Interaction effects between attitude toward marihuana and situational variables do not have any importance when predicting initiation of marihuana use.

Extent of new involvement: frequency of use among former nonusers. Two further analyses were carried out among nonusers, in which extent of involvement at Time 2, not merely initiation, was the behavior of interest. A longitudinal

analysis replicated the initiation analysis, with the dependent variable changed to frequency of marihuana use at Time 2. Results were similar to those reported for initiation, with no substantively important interaction effects (data not presented). Such effects did appear, however, in a cross-sectional analysis in which the predictors of the extent of newly initiated use were measured at the same point in time as use itself. The regression analysis predicting frequency of marihuana use at Time 2 among students who were nonusers at Time 1 is presented in the left half of Table 3. Predictors and behavior are *all measured at Time 2*, directly replicating the analyses in Table 1 for a subgroup of the population. As in the overall sample, an unusually large amount of interaction is present: together the interaction effects increase the explained variance by 8% ($F=194.56$). Attitude by itself, which has already been found not to be a strong predictor of marihuana use when other variables are held constant, appears to be even less important when individuals are moving rapidly through the range of participation in the behavior. Thus, a configuration of favorable social and attitudinal forces appears to be highly conducive to rapid involvement in marihuana use. Being a member of a peer group where marihuana use is highly prevalent may facilitate rapid and heavy involvement in marihuana use. This interpretation obtains additional support from a further statistical manipulation of the data. A plot of the

Table 2. Additive and Interactive Multiple Regression Analyses Predicting Initiation of Marihuana Use at Time 2 among Time 1 Nonusers from Time 1 Attitude toward Marihuana and Two Time 1 Situational Variables (Weighted Panel Sample of Time 1 Nonusers: $N=3,725$)

Time 1 Predictors ^a	Additive Model ^b		Interactive Model	
	Standardized Coefficient [*]	Unstandardized Coefficient [*]	F ratio ^c	R^2 increment ^d
Attitude toward marihuana	.18	(.03)	N.A.	N.A.
Number of friends using marihuana	.14	(.05)	15.9	.005
Parental tolerance of marihuana	.06	(.002)	5.0	.001
Additive $R^2=.15$				
Total $R^2=.16$				

^a The following five variables also were included as covariates in all the regressions: closeness to father, degree of peer activity, minor delinquency, political participation, and number of classes cut.

^c The F ratios apply to the coefficients for the interaction effects, not main effects.

^d The interaction effect for number of friends using marihuana appears in the equation before the interaction effect for parental tolerance of marihuana. Consequently, it is assigned the variance explained jointly by the two interaction effects.

^{*} All coefficients are statistically significant ($p<.05$).

N.A. = not applicable.

Table 3. Additive and Interactive Multiple Regression Analyses Predicting *Frequency of Marihuana Use at Time 2* from *Time 2 Attitude toward Marihuana* and *Two Time 2 Situational Variables* (Total Adolescent Weighted Panel Sample: N=5,258) in a Sample Decomposed According to *Marihuana Use at Time 1*

Time 2 Predictors ^a	Nonusers at Time 1 (N=3,725)				Users at Time 1 (N=1,533)			
	Additive Model ^b		Interactive Model		Additive Model ^b		Interactive Model	
	Standardized Coefficients*	Unstandardized Coefficients*	F ratio ^c	R ² increment ^d	Standardized Coefficients*	Unstandardized Coefficients*	F ratio ^c	R ² increment ^d
Attitude toward marihuana	.11	(.03)	N.A.	N.A.	.18	(.17)	N.A.	N.A.
Number of friends using marihuana	.32	(.18)	333.7	.071	.47	(.68)	19.8	.008
Parental tolerance of marihuana	.08	(.05)	38.4	.008	.07	(.11)	0.0	.000
	Additive R ² =.19				Additive R ² =.40			
	Total R ² =.27				Total R ² =.41			

^a The following five variables also were included as covariates in all the regressions: closeness to father, degree of peer activity, minor delinquency, political participation, and number of classes cut.
^b The coefficients below were estimated before the interaction effects were entered in the equation.
^c The F ratios apply to the coefficients for the interaction effects, not main effects.
^d The interaction effect for number of friends using marihuana appears in the equation before the interaction effect for parental tolerance of marihuana. Consequently, it is assigned the variance explained jointly by the interaction effects.
^{*} All coefficients are statistically significant (p<.05).
N.A.=not applicable.

difference between the absolute values of the residuals from the additive and interactive equations against the dependent variable at Time 2 reveals that the interaction terms improve the fit most for respondents with high values on the dependent variable in the Time 1 nonuser subsample. The correlation between this measure of improvement in fit and frequency of marihuana use is .36. This finding indicates that the interaction effects are occurring among adolescents who were nonusers at Time 1, but became frequent marihuana users at Time 2. The fact that the interactions were found to occur at this particular developmental phase suggests that strong social norms together with the appropriate attitude favor extensive involvement in the behavior.⁵

Frequency of use among prior users. The Time 1 nonusers constitute a subset of the total sample represented in the analysis of frequency of marihuana use at Time 2 (Table 1). The complementary group is composed of adolescents (N=1,533) who were already using marihuana at Time 1. This group includes adolescents who used continuously over the follow-up interval as well as some who did not.

The analyses were replicated on the restricted Time 2 sample of adolescents who reported having already used marihuana at Time 1. Again, all variables are measured at Time 2. The results are reported in the right half of Table 3, which is analogous to Table 1. The unstandardized coefficients show that the additive effects are roughly similar to those in Table 1. The interactive effects are miniscule: number

of friends using marihuana accounts for less than an additional 1% of the total variance.

Comparison of the two halves of Table 3 indicates that the total Time 2 variance explained is larger among Time 1 users than among Time 1 nonusers (41% vs. 27%), and that all three predictors have larger additive effects on marihuana use among prior users than among nonusers. Since the variables are all measured at the same time in both subsamples, the increased size of the unstandardized coefficients among Time 1 users may reflect the effect of prior marihuana use on the predictors in a group that has already been using for some time.

Frequency of use among continuous users. Finally, to establish that processes associated with cessation of marihuana use are not confounded with those for continuing use, we replicated the analysis in the subset of Time 1 marihuana users who also reported use between Time 1 and Time 2 (N=955) and hence definitely could be considered continuous users. The results are presented in Table 4. Although the additive R^2 is considerably smaller than among all prior users, the results follow similar patterns. The interaction effects are still very small. There is no evidence of mutually reinforcing effects of attitude and social pressures on frequency of marihuana use among adolescents who were already using marihuana at Time 1 and continued to use over the follow-up interval.

CONCLUSION

The relationship between marihuana-related attitudes and marihuana use is fairly high in the present sample of adolescents. When a measure of group norms is included with attitude in an equation predicting frequency of marihuana use, however, much of the apparent effect of attitude turns out to be spurious. Peer influence, in particular, has a considerably stronger additive effect than attitude. Under certain conditions, perceived extent of drug use in the peer group also interacts with attitude to improve the fit between attitude and behavior.

The strategy of carrying out the

⁵ It will be recalled that no such interactions appeared when the predictors were measured at Time 1. A partial explanation may be that attitudes are changing fairly rapidly in the short follow-up interval. Even with a correction for attenuation, the true Pearson's r in this subsample between Time 1 and Time 2 attitude lies between .81 and .59. We know from the cross-lagged regression analysis that attitudes are unlikely to be modified by behaviors. In situations of rapid change, measurement of an attitude at the same time as the behavior may represent a better approximation of the respondent's attitude during the follow-up interval than a measure taken in the past. The contrast between the two panels of Table 3 further strengthens the interpretation that it is among new users that the interactions occur.

Table 4. Additive and Interactive Multiple Regression Analyses Predicting *Frequency of Marihuana Use at Time 2* among Continuing Users from Time 2 Attitude toward Marihuana and Two Time 2 Situational Variables (Weighted Panel Sample of Continuing Users: N=955)

Time 2 Predictors ^a	Additive Model ^b		Interactive Model	
	Standardized Coefficient*	Unstandardized Coefficient*	F ratio ^c	R ² increment ^d
Attitude toward marihuana	.13	(.12)	N.A.	N.A.
Number of friends using marihuana	.38	(.51)	0.6	.000
Parental tolerance of marihuana	.09	(.11)	0.7	.000
Additive R ² = .26				
Total R ² = .27				

^a The following five variables also were included as covariates in all the regressions: closeness to father, degree of peer activity, minor delinquency, political participation, and number of classes cut.

^b The coefficients below were estimated before the interaction effects were entered in the equation.

^c The F ratios apply to the coefficients for the interaction effects, not main effects.

^d The interaction effect for number of friends using marihuana appears in the equation before the interaction effect for parental tolerance of marihuana. Consequently, it is assigned the variance explained jointly by the two interaction effects.

* All coefficients are statistically significant ($p < .05$).

N.A. = not applicable.

analyses on samples decomposed according to the adolescents' specific position in the developmental continuum of marihuana nonuse vs. use made it possible to specify the conditions under which the contingent consistency hypothesis was supported. We specified which type of situational variable had the greatest impact and the subgroup in which the effect appeared. Cross-sectional analyses based on an aggregated sample of adolescents at various stages of participation in marihuana use had shown interaction effects between attitudes and situations. Decomposition of the sample into prior nonusers and users reveals that group norms do not interact with and amplify the effect of predisposing attitudes on initiating marihuana use. In the earliest stage immediately preceding onset of marihuana use, all the effects of situational variables are additive. But interactive effects also do not appear for an ongoing behavior that is already well-established in the repertoire of the individual, in our particular sample for a period of at least six months. Rather, interactions appear specifically among those adolescents who shift from being nonusers to becoming frequent users in the follow-up interval. The interaction effects of perceived parental and peer norms increase the explained variance by an additional 8% of the total variance. Comparison of our results with those of Acock and DeFleur (1972) is instructive. Both studies deal with

marihuana-related behaviors. Acock and DeFleur were criticized (Susmilch et al., 1975) because a reanalysis of their data showed that the interaction effects between attitude and social pressures increased the explained variance by approximately 3% of the total variance, which is not statistically significant for their sample size of 212. Whether the criterion is a large increment in explained variance or statistical significance, our results, especially those for adolescents who shifted from nonuse to frequent use, constitute the strongest statistical evidence for the contingent consistency hypothesis presented to date in the literature.

Movement from the earliest stage of marihuana use to frequent use constitutes a radical change in behavior. Attitudes appear to have only a moderate impact on behavior when less extreme change or no change is occurring, but to be particularly susceptible to reinforcement by social pressures when extreme change is taking place. The findings cast doubt on Liska's (1974b:93) hypothesis that social norms reinforce attitudes only when the object of the attitude consists of people rather than specific behaviors.

The greater influence of peers than of parents may be directly related, not only to the greater reliance of adolescents on peers than on parents for matters related to adolescents' current life styles, but to the greater visibility of certain adolescent behaviors to peers than to parents. Social

pressures can only be expected to condition attitude-behavior consistency when the individual's role performance is readily visible to the members of the group. Especially where deviant behavior is concerned, a lack of visibility or observability can impede social control sufficiently for the behavior to take firm root and depart more and more from the group norms in question (Coser, 1961; Merton, 1957:319-21).

The contrast between the interactive effects of situational factors among prior users, on the one hand, and among new users who are moving rapidly into heavy use, on the other, may help to explain the conflicting findings of earlier studies. Cross-sectional samples, and other samples that do not permit measurement of the behavior at two points in time, confound the effects of situations on initiation vs. continued participation in the behavior. The overall results for a particular sample will depend upon the proportion of respondents who are at various phases, from nonparticipation in a behavior to early or longstanding participation. These proportions will vary in different samples and for different types of behaviors, as will the proportion of initiators participating heavily in the behavior. These intersample differences may account for discrepant findings among studies.

This interpretation needs to be tested further on other samples. The present study cannot tell us whether contingent effects of attitudes among individuals undergoing rapid behavioral change derive regularly from social influences or whether this is true only for the particular behavior and populations studied, namely, illegal use of drugs in adolescence. Ideally, our analyses, which are based on a synthetic cohort, should be measured in one cohort as it progresses developmentally through the various stages of participation in a particular behavior. Despite these qualifications, we are confident that this research has provided important new insights into the usefulness of the contingent consistency hypothesis. The redefinition of a population in terms of its particular developmental stage of participation in a behavioral sequence permits a specification

of the conditions when contingent consistency is most likely to hold.

REFERENCES

- Abelson, Herbert I., and Patricia M. Fishburne
1976 *Nonmedical Use of Psychoactive Substances*. Princeton: Response Analysis Corporation.
- Abelson, Herbert I., Patricia M. Fishburne, and Ira Cisin
1977 *National Survey on Drug Abuse: 1977*. Princeton: Response Analysis Corporation.
- Acocck, Alan C., and Melvin L. DeFleur
1972 "A configurational approach to contingent consistency in the attitude-behavior relationship." *American Sociological Review* 37:714-26.
- 1975 "Reply to Susmilch, Elliott and Schwartz." *American Sociological Review* 40:687-90.
- Clausen, John A. (ed.)
1968 *Socialization and Society*. Boston: Little, Brown.
- Clayton, Richard R.
1972 "Premarital sexual intercourse: a substantive test of the contingent consistency model." *Journal of Marriage and the Family* 34:273-81.
- Coser, Rose
1961 "Insulation from observability and types of social conformity." *American Sociological Review* 26:28-39.
- Deutscher, Irwin
1973 *What We Say/What We Do*. Glenview: Scott, Foresman.
- Fendrich, James M.
1967 "Perceived reference group support: racial attitudes and overt behavior." *American Sociological Review* 32:960-70.
- Heise, David R.
1970 "Causal inference from panel data." Pp. 3-27 in Edgar F. Borgatta (ed.), *Sociological Methodology*, 1970. San Francisco: Jossey-Bass.
- Heise, David R., and George W. Bohrnstedt
1970 "Validity, invalidity, and reliability." Pp. 104-29 in Edgar F. Borgatta (ed.), *Sociological Methodology*, 1970. San Francisco: Jossey-Bass.
- Johnson, Michael P.
1973 "Commitment: a conceptual structure and empirical application." *Sociological Quarterly* 14:395-406.
- Kandel, Denise B.
1973 "Adolescent marijuana use: role of parents and peers." *Science* 181:1067-70.
- Kandel, Denise B., R. C. Kessler, and R. Z. Margulies
1978 "Antecedents of initiation into stages of drug use: a developmental analysis." Pp. 73-9 in D. B. Kandel (ed.), *Longitudinal Research on Drug Use: Empirical Findings and Methodological Issues*. Washington, D.C.: Hemisphere-John Wiley.

- Kandel, Denise B., and G. Lesser
1972 *Youth in Two Worlds*. San Francisco: Jossey-Bass.
- Kandel, Denise, Eric Single, and Ronald C. Kessler
1976 "The epidemiology of drug use among New York state high school students: distribution, trends, and change in rates of use." *American Journal of Public Health* 66:43-53.
- Kelman, Herbert C.
1974 "Attitudes are alive and well and gainfully employed in the sphere of action." *American Psychologist* 29:310-24.
- Liska, Allen E.
1974a "Emergent issues in the attitude-behavior consistency controversy." *American Sociological Review* 39:261-72.
1974b "The impact of attitude on behavior: attitude-social support interaction." *Pacific Sociological Review* 17:83-97.
- Merton, Robert K.
1957 *Social Theory and Social Structure*. New York: Free Press.
- Rummel, R. J.
1970 *Applied Factor Analysis*. Evanston: Northwestern University Press.
- Schuman, Howard, and Michael P. Johnson
1976 "Attitudes and behavior." Pp. 161-207 in Alex Inkeles, James Coleman, and Neil Smelser (eds.), *Annual Review of Sociology*, Vol. 2. Palo Alto: Annual Reviews.
- Smith, K.
1974 "On estimating the reliability of composites through factor analysis." *Sociological Methods and Research* 2:485-510.
- Susmilch, Charles E., Gregory C. Elliott, and Shalom H. Schwartz
1975 "Contingent consistency and the attitude-behavior relationship: a comment." *American Sociological Review* 40:682-6.
- Warner, Lyle G., and Melvin L. DeFleur
1969 "Attitude as an interactional concept: social constraints and social distance as intervening variables between attitudes and action." *American Sociological Review* 34:153-69.
- Wicker, Allen W.
1969 "Attitudes versus actions: the relationship of verbal and overt behavioral responses to attitude objects." *Journal of Social Issues* 25:41-78.

GOVERNMENT POLICY AND LOCAL PRACTICE*

PAUL ATTEWELL

University of California, Berkeley

DEAN R. GERSTEIN

National Academy of Sciences

American Sociological Review 1979, Vol. 44 (April):311-327

Pressman and Wildavsky's (1973) popular view that government policy becomes ineffectual in the face of local exigencies is questioned. In contrast, using a case study of government policy on methadone treatment for heroin addiction, we show that federal decision making has profound impact even at microsociological levels of clinic life. A model drawn from organizations theory is developed to explain the efficacy of federal action. Policy is seen often to embody conflicting or contradictory demands due to governmental agencies' attempts to coopt or placate interests hostile to new policy directions. Governmental monopsony ensures that competing local agencies acquiesce to the details of federal intentions. But internal contradictions in policies limit or undermine local agencies' resources for gaining compliance from their clientele. Thus compromised policies, effectively translated by federal regulation into local practice, result in dysfunctional adaptations by clients, and the policies "fail."

Introduction

A position currently popular among policy scientists views government policy as relatively impotent in local settings because, it is argued, original policy intentions become diluted in the face of daily exigencies at the local level (Pressman and Wildavsky, 1973). It follows from the Pressman-Wildavsky approach that the apparent failure of many government policies stems not from the faults of the policies themselves, but rather from the complexities of implementation at the local level and especially from the diffusion of power among multiple local decision makers. Such a perspective therefore implies broad discontinuity between governmental policy making and local program outcomes, as a result of essentially

particularistic aspects of local circumstances.

Based on our research on government policy and its implementation in the area of drug abuse, we present a different conceptualization of government policy, which has implications opposite to those of the Pressman-Wildavsky approach. Drawing on organizations theory we demonstrate that under certain specifiable conditions, federal policy can be seen to directly determine local program behavior even down to the microsociological level. The "failure" of local efforts is seen to flow *systematically from the structure of policy making*, especially insofar as contradictory interests, embodied in policy, undermine crucial resources which local agencies require to gain the compliance of their clientele on a day-to-day basis.

Using a case study approach, we attempt to link the macrosociology of federal policy on opiate addiction to the microsociology of methadone treatment, in order to show how the sociopolitical forces which shape government policy subsequently determine the practical realm of daily clinic life. The link between public policy and the clinical Lebenswelt is structured by the managerial responses of treatment agencies to the institutionalization of government regulation.

Our model is developed in the sections below. The material is presented in five stages. The first is an historical overview

* Address all communications to: Paul Attewell; Institute for the Study of Social Change; University of California; Berkeley, CA 94720.

This research was supported in part by NIMH training grant #5T32 14640-03, and by USPHS grant #MH 14 583. We would like to thank Mark Baldasare, Phil Bonacich, Oscar Grusky, Eugenia Miller, Katherine Newman, and four anonymous reviewers for advice received during the preparation of this manuscript. We also wish to thank Lewis L. Judd and Audrey Holliday for their administrative support during one part of this project. Finally, we are grateful to the many individuals who, over the five-year course of our research, gave of their time, trust, and intimate knowledge of these problems. The views expressed in the paper are, however, the responsibility of the authors alone.

of U.S. heroin policy. Secondly there follows a more detailed analysis of the policy towards methadone maintenance implemented in the late 1960s. The purpose here is to examine why policy took the form it did, and what this implied for treatment outcomes. A third section goes into the response of treatment agencies to federal regulations and local pressures. The fourth section analyzes the impact of this process upon the clinic milieu, especially upon the actions of addicts and staff. The final section summarizes the practical dilemmas of gaining compliance in the clinical setting as the ultimate result of the policies involved, and generalizes from the specific case-study findings to a more widely applicable model of governmental regulation and its likely outcome.

We have utilized two kinds of data in this research. First, in characterizing clinic and addict life, we draw upon our own work in several methadone clinics (from 30 to 160 clients in size) in one California city. This included ten months of intensive participant-observation research in three clinics (Gerstein, 1975; 1976), detailed, transcribed interviews with a representative sample ($N=100$) of present and past clients of the clinics (Judd and Gerstein, 1975; Attewell et al., 1976), and statistical analyses of program records for five clinics over a four-year period. We obtained comparative data on clinics elsewhere from published ethnographies of treatment settings (Gould et al., 1974; Nelkin, 1973; Soloway, 1974), materials published by program administrators (Dole and Nyswander, 1976; Mandell, 1971); and from our own discussions with treatment managers and personnel in several other cities.

Second, in characterizing government policy, we have drawn upon government publications and upon historical materials including those published by principal figures (Lindesmith, 1965; Musto, 1973; Chambers and Brill, 1973; Finney, 1975; Dole and Nyswander, 1976).

Evolution of U.S. Opiate Policy

Prior to this century, opium and all of its derivatives were available virtually free of legal restriction throughout the United

States. Their use for recreational and a broad range of medicinal and quasi-medicinal purposes was widespread. However under pressure from social reformers, and for supplementary reasons stemming from international politics, a series of federal actions between 1906 and 1920 made distribution and use of many opiates illegal (Musto, 1973). Even physicians were constrained to use opiates strictly for analgesic purposes. By 1938, some 25,000 medical doctors had been arraigned and 3,000 imprisoned because they attempted to prescribe narcotics to addicts (Brill, 1973:11).

Thus with the exception of a few short-lived clinics (1912-1924), addiction effectively was taken out of the jurisdiction of private physicians and became defined as a law enforcement rather than a medical problem (Brecher et al., 1972:116). Thereafter, medical involvement was limited to the Public Health Service, especially its Lexington prison-hospital.

Throughout the 1950s criticism grew over a purely law enforcement approach to addiction, culminating in a 1963 recommendation by a Presidential Commission on Drug Abuse that medical treatments be reconsidered. A technique was developed in 1964, by Vincent Dole and Marie Nyswander at Rockefeller University, based on earlier work by Isbell and Vogel (1949), which involved weaning an addict off heroin and substituting a daily oral dose of the synthetic opiate methadone. The addict entered an inpatient (later ambulatory) facility, received progressively larger doses of methadone until no heroin withdrawal symptoms were evident, and then was expected to take this dose of daily methadone *indefinitely*. Intensive supportive therapy to reestablish ego integration and normal social functioning—especially a steady paying job—ensued, and patients were put on an ambulatory (outpatient) basis, with renewable prescriptions for methadone, once such normal functioning had been established.

The major achievement of Dole and Nyswander in the mid-1960s was not simply their perfection of this clinical technique. Rather it was their gaining legitimation for the medical approach to addiction

as a treatable disease. This legitimization involved a postulated analogy between addiction and chronic diseases such as diabetes. Addicts, it was argued, suffer a permanent metabolic deficiency. Just as diabetics require insulin medication for an indefinite period of time, so addicts require ongoing methadone, for an indefinite period, in order to "cure" their disease (Chambers and Brill, 1973:350). In addition, it was claimed that methadone (a) blocked the addict's craving for heroin, and (b) blocked the addict's pleasure from taking heroin (Dole and Nyswander, 1965; 1966; 1967).

Government Policy and Early Institutional Regulation

Dole and Nyswander not only were faced with the task of legitimating methadone maintenance treatment in the eyes of the general public and fellow doctors. They also faced a variety of institutional actors: the Food and Drug Administration (FDA), the Bureau of Narcotics and Dangerous Drugs (BNDD), and local political officeholders. The early clinical trials with methadone treatment carried out by Dole and Nyswander took place in a context in which legality was unclear, and early researchers took the risk of prosecution and of censure for practicing unethical medicine. In 1962, the Medical Society of the County of New York partially legitimated the treatment of addicts, including prescribing narcotics to them, by ruling that such treatment in a strict clinical research setting was ethical medicine (Nelkin, 1973:41). Such clinical programs later were specifically authorized by a 1965 law passed by the New York state legislature. Nevertheless the legal situation remained ambiguous (Brill, 1973:21-2), and both the FDA and the BNDD attempted to secure their jurisdiction in the area, as we shall explain below.

Critics of Dole and Nyswander attacked methadone maintenance on two bases. The first was that it was morally wrong to give narcotics to addicts. One medical critic argued that methadone researchers were "openly giving addicts narcotics to gratify and perpetuate their addiction" (Ausubel, 1966). The second objection in-

volved the possible diversion or misuse of methadone by addicts. This issue was particularly salient to the BNDD, the federal police agency responsible for controlling illegal drugs. In spite of the New York law, the BNDD maintained that methadone programs were illegal under the 1914 Federal Harrison Act (Nelkin, 1973:48). Although the BNDD went so far as to approach certain clinics and make its views known, it did not take the step of prosecuting the clinics (Brecher et al., 1972: 164). Hence its jurisdiction remained ambiguous until a later period.

The FDA has no legal power to control the practice of medicine. However, it does have certain powers to control new drugs, especially to monitor their production, quality, availability, etc. As methadone clinics began opening in various hospitals, the FDA asserted its jurisdiction by categorizing methadone as an "Investigational New Drug," this despite methadone's use in the U.S. and abroad since 1943. This special status of methadone continued well into the 1970s, even after tens of thousands of cases had shown methadone maintenance to be quite safe under clinical management. However, the invocation and protraction of investigational status gave the FDA a continuing mandate to license and inspect clinics prescribing the drug. The latter police function it delegated to the BNDD in 1970.

Initially the FDA simply required physicians wishing to treat addicts with methadone to obtain permission to use this "Investigational New Drug." However, in 1970/1971 the FDA promulgated a "model protocol" which specified in considerable detail various constraints on, and procedures to be carried out in, methadone programs. As we shall see this protocol had a dual function. Firstly it acted to consolidate the practical control of the FDA over physicians wishing to provide methadone treatment, by detailing program regulations and behavior. More importantly, however, it sought to coopt or placate significant critics of methadone treatment by casting their objections in the form of FDA regulations. For example, the BNDD was given direct control over medication security, and had

veto power over licensing. Similarly the FDA bowed to the interests of medical critics such as Ausubel (1966), and included in the contents of the model protocol a variety of measures (to be detailed momentarily) designed to reassure critics that their specific fears concerning methadone would not be realized.

This response of the federal government, to *insist on its jurisdiction* over a new area, and to *embody in policy itself* the views of a variety of interested and often critical parties, was to have crucial consequences for implementation at the local level. This phenomenon is an important element in our general model of government action. We shall return to this in our discussion below.

Substantive features of the FDA model protocol included the following stipulations:

(1) Minors (under 18) were excluded. This was later modified to allow special exceptions.

(2) Documentation had to be provided of prior and present addiction, and a confirmed history of one or more prior failures of treatment, before an addict could obtain methadone.

(3) Consideration had to be given to eventually discontinuing the drug for patients who had adjusted well to maintenance.

(4) Termination from treatment was required for patients who continued to use narcotics or other drugs, or who exhibited alcoholism or continued criminal activity after entering treatment. Drug use was to be checked by at least weekly collection of urine specimens for laboratory testing.

(5) Prior BNDD approval of any methadone program was required. (See U.S. Food and Drug Administration, 1970.)

It is central to our argument that these and other provisions in the FDA model protocol strongly determined the future course of methadone maintenance. To demonstrate this, we shall first make four points concerning these particulars of the protocol, and then we shall consider why the protocol in general had such an impact on program behavior.

A. The protocol resulted in the virtual exclusion from methadone maintenance of the primary vector of heroin "contagion": adolescents who have themselves only started heroin use comparatively recently, and who rapidly introduce their friends to the drug (Hunt and Chambers, 1976). FDA item #1 above excluded many of these from treatment on age grounds alone. Moreover item #2 above, documentation of prior failures at abstinence, requires considerable addiction history. Long-term addicts who have served jail sentences (which constitute "forced abstinence") are easily able to furnish documentary proofs of prior failure. However younger or recently-addicted individuals are unlikely to have accumulated such documentation. Consequently this FDA protocol stipulation precluded maintenance programs from treating the recently addicted individuals who keep the heroin system supplied with recruits, and instead limited methadone maintenance to a "treatment of last resort." This bowed to the views of those critics who claimed methadone simply addicted heroin users to a new drug. By allowing only long-term, "hard-core" addicts access to methadone, the FDA staved off the argument that it was turning young drug users into permanent methadone addicts.

B. The diabetes analogy of Dole and Nyswander was effectively struck down. Although item #3 above did not require methadone patients to be terminated after a time, it set up the ideal that a successful patient be weaned from methadone and end up drug free. This was in direct contrast to the Dole-Nyswander view of methadone as a lifelong medication like insulin, and instead made the drug-free "graduate" the standard of success. This shift in the criterion of successful treatment of a methadone patient was to have strong implications for the future behavior of clinics.

C. The BNDD's institutional interest was to prevent methadone from reaching the illegal market (Dole and Nyswander, 1976). It had no responsibility for treatment. Yet in order to obtain and maintain BNDD approval, methadone programs were obliged to institute rigorous control, security, and accounting procedures.

Thus security preempted therapy in the design of dispensing procedures.

D. The FDA protocols stipulated a maximum daily dose of 160 mg. Despite assurances that local programs could argue for a higher figure, the FDA succeeded, via this "suggestion," in controlling dosages and making lower doses a measure of better programs. As we shall see below, mean dosage levels were to decrease steadily in subsequent years, eroding yet more of the Dole-Nyswander method. However this FDA protocol item countered charges made by critics of maintenance programs to the effect that methadone would be prescribed in high dosages which would allow addicts to get "high," and hence abet their "moral decay."

At this point we have to raise the issue of why the provisions of the FDA protocol had such a profound and long-lasting effect, even though they were not enforceable as law. The FDA itself was obliged to state that the protocol was "intended only as a guide to the profession," while "modification of the protocol and completely different protocols will be accepted, provided they can be justified by the sponsor" (U.S. Food and Drug Administration, 1970). In more general terms we are raising the issue of why governmental agencies' policies often acquire considerable force even though they are not embodied in law.

First, in the short term, program applicants who were faced with a lengthy and difficult FDA licensing procedure tended to stick closely to the model protocol, rather than risk delay or rejections by diverging from the guide. In the longer term, the FDA guide gained its force because it was adopted by most of the crucial organizational actors who constituted the external environment of the methadone programs. The FDA protocol provided potential criteria for evaluating a program: numbers of drug-free graduates, changes in arrest records, etc. State and local agencies therefore took these as standards by which to assess a program's requests for licensing and refunding.

In addition the FDA protocol became a model for permanent state legislation. (The states *do* have jurisdiction over med-

ical practice.) State laws were usually more restrictive elaborations of the FDA protocol. For example, in California, state regulations required *two* or more documented treatment failures, and proof of *two* years addiction prior to entry into a methadone program, compared with one failure and one year in the FDA protocol.

We see here a process not uncommon in situations where federal agencies set technically-complex safety standards: less-expert political bodies show their concern by toughening up the standards. This often occurs at the behest of state regulatory agencies which increase their areas of jurisdiction and autonomy by arguing for controls which go beyond those already covered at the federal level. Similar phenomena have been discussed in other settings by Becker (1963:147-63). In his analysis of the impact of institutionalization and enforcement upon "moral entrepreneurship," he notes both a tendency for legislators to insert their own interests at the rule-making stage, and the fact that enforcement personnel feel the need to justify their existence, and the goal displacement which often results from this (Becker, 1963:152, 156-62). One can see both of these processes operating in the case of methadone maintenance.

Thus the FDA protocol, many of whose elements were ideals or suggestions, become elaborated into state law. The protocol and the laws then became the bases upon which authorized inspectors judged programs during site visits. In some cases these inspectors were empowered to revoke program licenses. In other cases, which we will discuss below, they simply could discredit programs by feeding negative evaluative findings to the local news media.

In sum, the FDA protocol molded the external environment within which programs operated by providing a standard against which programs could be judged. The ways in which programs responded to this process are the subject of the next section.

Managerial Response at the Program Level

The rapid appropriation of millions of dollars for drug treatment, and the relative

paucity of organizations already in the field, led to a proliferation of programs, as universities, hospitals, community groups, and private corporations responded to the existence of funding (Mandell, 1971; Finney, 1975:20-30; Diaz and David, 1972). Because the FDA invoked an investigational status for methadone, which required that a potential program show evidence of medical and administrative expertise, community-based groups were hindered considerably in acquiring methadone licenses. This frequently led community groups to develop drug-free addiction treatment modalities. In contrast, university and hospital-affiliated groups, and private organizations with medical and bureaucratic expertise, did well in gaining FDA authorization and government funding for methadone. Since community-based drug-free treatment agencies and methadone maintenance programs provided alternative approaches to treatment, and often competed for funding and addict clientele, community agencies frequently became pitted against the more medical-establishment methadone agencies for such resources. In cities where community groups were able to wield political influence, this acted to make local government especially cautious over methadone treatment (cf. Nelkin, 1973:90-2).

Even among methadone programs "range wars" erupted, and a process of monopolization or oligopolization later occurred in many cities (cf. Finney, 1975:25). In the early years, however, there was something of a funding bonanza, and many agencies sought to enter the field. Typically programs were set up as pilot projects, subject to continuation only if acceptable performance was demonstrated.

Programs responded to this situation by developing what we shall term a *reality construction* or *presentation of self* capability in order to convince funding and regulatory agencies that they were doing a good job (Goffman, 1959). Waiting lists were adopted as one indicator of the need for a program, its success in the eyes of the addict community, and, of course, the need for more money. Characteristics of

addicts in treatment, e.g., time in treatment, positive changes in employment status, reduction in criminal activity, also became widely publicized as indicators of success. A program's statistics were compared with others' in order to show its efficiency (Proceedings of the National Conference on Methadone Treatment, 1971; 1972; cf. Thompson, 1967). It took several years to realize that time series data of the type collected by programs were particularly susceptible to statistical "sleight of hand." By 1973, Brill and Chambers (1973:362-3) were complaining: "Unfortunately, not everyone counts everyone when compiling 'retention' or 'attrition' statistics to share with their professional peers, with funding sources, or with the less-than-informed public." Even indices of reduced criminal activity and increased employment proved subject to manipulation or misinterpretation (Holzman and Lukoff, 1976:6ff).

In addition to these positive presentational activities, methadone programs also had to manipulate their public image in order to stave off external criticism. This became progressively more important over the years as state and federal laws gave regulatory control to a variety of watchdog agencies. For example, a California Board of Pharmacy inspector complained in the local press of one program: "It is a failure to the agencies monitoring it, to the agencies administering it, to the patients using it, and to the taxpayers." His major complaint was that program administrators would not define "just what constitutes a successful *completion* of the program" (emphasis added).

We see here the impact of the FDA protocol in ignoring Dole and Nyswander's rationale for indefinite methadone treatment (like insulin). Instead of regarding the fact that addicts were in treatment as itself a success, regulators invoked the FDA ideal of a drug-free addict (weaned from methadone) as measure of success. The newspaper which reported this inspector's complaints subsequently divided the total methadone program budget by the small number of drug-free graduates and headlined their article: "Each 'Cure' Costs Taxpayers \$53,000."

Thus Dole and Nyswander's original conception of methadone treatment was forgotten.

This perilous external environment (cf. Nelkin, 1973:138) and the desire to look good to funding and regulatory agencies increased the importance of manipulating the public image of methadone programs. These presentational needs were reflected in three particular contexts: (A) aggregate movement of methadone dosage levels; (B) numbers of clients admitted and discharged; and (C) staff composition. In each case it will be seen that the programs studied showed increasing sensitivity toward outside regulatory agencies and other potential threats, and hence reorganized or toughened up clinical practices to avoid any possible external criticism.

A. Methadone dosage levels. From the earliest days of methadone maintenance, critics had accused programs of helping addicts get high. Thus one physician attacked Dole and Nyswander: "... they are simply substituting the euphoric action of methadone for the euphoric action of heroin by administering massive dosages of the former" (Ausubel, 1966:949). Equally the BNDD pushed for lower dosages in the belief that dispensing higher ones meant a higher likelihood of illegal diversion. In such an environment, programs' mean dosage levels became strategic symbols of their toughness and desire to wean addicts from methadone. High doses came under public criticism from surveillance agencies, and programs responded by further lowering their dispensing averages.

Consequently, methadone dosage became a pawn in an organizational struggle, its individual impact on each particular addict lost in presentational politics. In response to external agencies there was pressure on clinicians from program administrators to deny addict requests for increases, and to lower stable doses. The result was a steady decline in average dose over the years.

An additional matter, manipulated for similar reasons, involved "take home" methadone. The requirement to attend the clinic seven days a week in order to ingest methadone was first seen as a temporary

measure during a client's initial stabilization. Thereafter, in order to encourage more normalized lives, including employment, clients periodically were allowed to take home and self-administer one, two or more days worth of methadone. However this was a security risk, since take home methadone could potentially be sold illegally. In line with the increasing sensitivity to possible sources of criticism, the clinics studied, progressively reducing take home privilege over the years, made it available to fewer and fewer individuals and hedged its use with greater restrictions.

B. Admissions and discharges. In the early days of the clinics studied, waiting lists existed and program success could be demonstrated by burgeoning numbers of clients in treatment. Some clients continued using illegal drugs, but this was not seen as *prima facie* failure, since the figures showed considerable reductions in drug use relative to untreated addicts (Chambers and Taylor, 1971). However, as regulation intensified, as community media became more critical, and as federal and local funding sources grew more begrudging, program administrators pushed harder for stringent enforcement of rules, backed by detoxification (discharge from the program following stepwise reduction of methadone dose). In 1973 a policy shift was undertaken to toughen up clinical behavior, which resulted in a rapid *doubling* of the rate of termination of clients, as those with records of continuing heroin abuse were expelled from treatment. The new policy caused a precipitous (30%) decrease in total caseloads over the year.

The point here is that administrative fiat, oriented toward external regulatory and surveillance agencies, succeeded in rapidly changing program census. There was no indication based on a study of clinical records that these actions resulted from changed patient behavior during that period.

C. Staffing. In the early days of methadone maintenance many programs utilized exaddicts (i.e., persons currently presumed abstinent) as front-line staff in the clinics. This pattern of exaddict staff-

ing was quite common nationwide, as exaddict peer counselling provided role models for clients, job prospects for exaddicts, and inexpensive labor for programs, all at one sweep (Mandell, 1971). In the clinics studied, physicians, as expensive resources, primarily were involved in signing prescriptions and in performing periodic physical examinations. Doctors did wield considerable power by regulating dosages; however they were seldom involved in therapy, this being the task of the paraprofessional exaddict counsellors.

While some commentators on methadone maintenance have stressed that the impact of government regulation was to limit the role of physicians in treatment (Dole and Nyswander, 1976:2119), our data indicate that the most profound change in staffing policy was a movement away from hiring exaddicts as staff. This has been commented upon at the national level (Espada, 1977), and is borne out in the clinics which we studied, where a steady turnover of exaddict staff in early years turned into a full-scale rout in later years. As we shall describe below, this again took place in response to the program's increasing concerns with rigid adherence to mandated rules, and its need to present an efficient, tough image to the external environment.

In summary, what we see in these several program responses to government regulation is a progressive displacement of organizational goals, away from therapeutic aims per se and toward an increasing concern with manipulation of clinic practices in order to look good to outside agencies, particularly to powerful surveillance and funding agencies. At a more general level we would suggest that this kind of organizational goal displacement is typical of programs heavily dependent on government money or licensing for their continued existence. Since the goal of maintaining the continued existence of an organization is logically prior to that of the instrumental task at hand, there is a constant tendency to become preoccupied with the former at the cost of the latter. In the case of detailed governmental regulation and surveillance this implies the rise of bureaucratic interests in the organization and the subordination of other inter-

ests to the primary one of adapting to one's external environment in order to keep the organization safe (cf. Thompson, 1967; Dole and Nyswander, 1976:2119).

We now shall consider the cumulative effect of these organizational responses upon the experiential realm of daily clinic life.

Clinic Life for Clients and Staff

Once the initial disorientation of entering a new setting has been dispelled, the experience of a patient within a methadone clinic is fundamentally one of regulation, of rules, of specified procedures which have to be carried out: in short, of grown adults in a high school setting. Everyone knows the rules, virtually everyone present dislikes the rules, but everyone's behavior is rule-governed, even if only in grudging ritualistic compliance.

The fundamental business at hand is the distribution of methadone. There is no casualness here. Fixed hours are set—a couple of hours each in the morning and afternoon. Anyone who is late misses his/her methadone. Persons are called singly to a nurse at an enclosed dispensing station. Although client and nurse see one another daily, the client must always produce a special I.D. card, in the ritualistic fashion of military security, here mandated by BNDD. Methadone is prepackaged in coded bottles of fruit drink, of fixed volume to disguise the dosage, which is meant to be a secret to clients and even counselors. Each client must drink in full view of the nurse, and then respond to questions, to assure that the drink has been swallowed; all this also is mandated by BNDD. Methadone dispensing, the basic ritual, occurs seven days a week, 365 days per year.

Other practices are equally mandatory but less regular: especially the "urine drop." Once a week (he/she never knows quite when) each client is approached by a counselor for a urine specimen. The purpose of obtaining this specimen is for detection of illegal drug use. The urine donation (like the dispensing ritual) is a regular reminder of distrust. It bears no relation to the euphemistic privacy of a urologist's

office. The addict enters a bathroom, followed by a counselor. The rules specify that he/she must be watched while urinating into the bottle. Mirrors are even installed to facilitate this surveillance. Some counselors look away, act indifferently, or dissemble a lack of attention, but the underlying rule is strengthened by such interactional camouflage work.

An important activity occurs when a urine sample has shown "dirty"—evidence of residues of heroin, barbiturates, etc. The client, confronted with the report, often denies all knowledge: "... [I]t's a mistake. The test screwed up. ... The counselor messed up the bottles;" protests of injured innocence to save face. The counselor must act peeved: warnings that the next time may be the last, threats of future retribution, occasional real retribution, notice of a (21-day) "punitive detoxification." Since urinalysis only detects a heroin injection from the prior day or two—and then only if the heroin was relatively pure and the urine not too dilute—injecting heroin becomes Russian Roulette. In the context of "probably they won't ask for a drop today," or "I fixed [injected] two days ago, probably it'll turn up negative," being caught is a nasty surprise, an unlucky event, a good reason to be angry.

Another weekly ritual is an interview with the counselor. Again, a degree of interpersonal concern and interest often exists, although counselors have on the average ten minutes per client per week for face-to-face counselling. Occasionally therapeutic relationships blossom. But in each interview a formal mandated agenda of information must be obtained: "Did you work this week?" Engage in illegal activities? Were you arrested, convicted, etc.?"

To these repetitive activities are added an occasional group therapy session, extended personal counseling, a doctor appointment for some physical complaint, and so on. But such activities are only leaven. The essential routines consist of waiting for methadone, giving urine, and checking in with the counselor. Many patients totally ignore voluntary therapeutic offerings. The senior administrator of one program felt obliged to point out to

the press in the fifth year of the program's operation: "We put in a rule eighteen months ago that anybody on the program was to participate in counselling. That rule is still in effect for patients until they and their counselors decide sessions are not needed."

While the clinical experience of the typical client is a one-dimensional exchange of weekly urine for daily methadone, the clinical reality of the staff is necessarily more complex. The backstage operation of a methadone clinic can be seen as involving an interpenetration of three different realities, each with its own rationale and interests. The first involves self-definition, particularly for the counselors and clinic directors, who were at first (1970–1972) virtually all exaddicts, though individuals without heroin experience were later hired. The exaddicts' job credentials were principally their firsthand knowledge of addict behavior, presumed (since Synanon's publicity) to give them special efficacy in drug treatment. Exaddict counselors had to put this folk knowledge in service of a clinical perspective, while shifting their own self-image from down-and-out to upwardly mobile. They had, on the one hand, to convince addict clients of their savoir faire, that they could not be "conned," and, on the other, to establish themselves as paraprofessional clinicians. This was accomplished in part by language and style. Counselors and clinic directors dressed and spoke with a streetwise style, but also with a facile psychiatric terminology: "subconscious motivation," "defense and coping mechanisms," "denial" and "confrontation," etc. This combination set them off from the clientele, without sacrificing their claim to an insider's knowledge of addiction.

A second reality, which all staff shared, was a bureaucratic-administrative one. Each clinic director was sandwiched between the top program administrators far from the clinic, and the day-to-day problems of staff and clients. Through the clinic director came administrative directives, the majority involved with getting paperwork done, new government edicts and inspections, and making sure security was kept tight. Since rules were con-

stantly breached or bent in the day-to-day life of the clinic, and were, in any case, so complex and frequently changed that often it was unclear what rule applied, there was always room for criticism (and grounds for firings) by the administration. Getting the paperwork done, and avoiding or patching up administrative upsets, were constant concerns for the staff.

The third reality involved the day-to-day management of addicts as nonmedical, nonbureaucratic, nonpassive people. A typical day of staff concerns would be as follows (using their own terminology): Client X is being a pain about needing more methadone, is kicking up a fuss about being screwed over, loudly telling anyone who will listen. Client Y is a slick S.O.B. whom the staff would like to get rid of, but whom no one can catch making heroin deals in the clinic, or using heroin. Client Z keeps coming up dirty, but her old man has just gotten out of jail, lives with her, and is shooting up all the time. The staff knows she has two kids, cares desperately about staying in the program, and would go back to dope and hooking if kicked off the program.

The experiential immediacy of concerns like these enables them to compete in the minds of staff with bureaucratic and other demands.

Staff Responses to the Clinical Milieu

It is clear that the staff members' *normal* situation, particularly for exaddicts, was one of profound role conflict. This was exacerbated as bureaucratization progressed, although it was partially "solved" by the steady elimination of exaddicts. The role conflict drew its power from all of the interests working at cross purposes in the clinic. First and foremost, counselors—particularly exaddict ones—sympathized and even identified with clients. Some knew at firsthand that success in the program meant new life chances: keeping a job, gaining status and self-respect, regaining hope. They also knew what involuntary expulsion from the clinic could mean: the extraordinary mental and physical pressures of hustling, seeking dope, pain, finding dope, shoot-

ing, near or actual overdoses. Often superimposed upon this is constant harassment by police and narcotic agents, and emotional and sometimes physiological blackmail as police lock addicts up until withdrawal prompts them to "cooperate." Exaddict or nonaddict counselors were too close to this reality not to be influenced by it. The cold administrative calculus of punishment broke down when the client was known as an individual and the situation into which he/she would be thrust was viewed as abominable.

The first level of conflict, then, derived from the counselor's proximity to the client world, crossed with demands to enforce punitive sanctions. This conflict was not simply a matter of counselor's social background, but was *genuinely organizational in its origins*. Counselors qua therapists were expected to establish supportive relationships with clients. The establishment of therapeutic thrust was and always is predicated upon notions of care and respect for the individual client. A lack of such particularistic solidarity empties a therapeutic relationship of its meaning and force. Nevertheless, due to the increasing concern with the external environment the counselors were increasingly required to be disciplinarians, enforcers of universalistic rules, organizational moralists. The conflict arose from contradictory demands to be particularistic while universalistic, and trusting while punitive.

While counselor conflict derived at one level from opposition between therapeutic and rule maintenance interests, a second conflict involved self-image. Counselors wished to see themselves as persons of status, individuals with skills, and more specifically, professionals able to help others. Perhaps the term *altruistic orientation* overstates the real professionalism involved, but counselors were undoubtedly caught in this imagery. Administrative policies increasingly undermined such bases of self-definition. A subordinate force which thought it knew what was best for addicts could not be tolerated, especially as the watchdog and punitive functions of counselors began to overshadow therapeutic concerns. Thus in addition to having to integrate contradictory pressure

in their *duties*, counselors had to stave off contradictory definitions of their status. Their role as counselor had positive cultural value, while the role of policeman was particularly abhorrent in addict society, in which police and snitches were loathed. The administration, far from euphemizing the punitive, watchdog functions of counselors, left increasingly little doubt that they were there primarily for that purpose. The most cogent testimony to the assault upon counselors' self-images was the terminology used by a senior program administrator, who began referring to counselors as "urine monitors."

Staff response to these cross pressures in the clinics studied varied between demoralization, acquiescence, and hostility. The importance of these jobs for the exaddicts gave the process extra poignancy. Counselling paid comparatively little; but it was generally the first white-collar work exaddicts had had, their first experience of a respectable niche in which they could keep working successfully. Under these cross pressures some exaddicts left early for other programs. Others dropped out, were kicked out, or acquiesced to demands which redefined their role. For those who did leave, the blow often propelled them directly towards their only other social identity: dope fiend. Completing the circle, some later reappeared as clients in the program.

The Client Point of View

In the sections above, we have given our (sociological) view of several changes which took place in methadone maintenance, e.g., shifts in dosages, staff changes, sudden changes in program expulsions, etc., and have tried to explain these changes in terms of program response to its external environment and mandated policies. It is important to realize however that our analytic perspective on these matters is not that of the addicts themselves. While these same topics were constantly addressed in the course of our interviews with addicts, their folk perceptions of these phenomena clustered instead around the apparent arbitrariness of clinic life, especially as

regards disciplinary actions against addicts.

We wish to make two points concerning this addict world view: first, that the addict perspective was a rational response to real phenomena, i.e., that a high degree of arbitrariness did, in fact, exist. Secondly, we wish to show that the addict's world view was readily rendered irrational and indeed seen as one aspect of addict personality pathologies, by staff members who viewed addict responses through a psychiatric framework. The mutual unintelligibility of addict and staff world views is best illustrated in terms of urinalysis requirements and punitive detoxification (i.e., incremental reduction of methadone dose to zero and expulsion from the clinic).

Examining the issue of urinalysis, we find that a high degree of arbitrariness (or luck) is involved in the process. On the one hand, addicts were faced with uncertainty as to what day they would be called to give a urine sample. Thus, being caught with a "dirty urine" was not simply a matter of scientifically catching those clients who were illegally continuing heroin use. Rather it was a matter of being the unlucky one who happened to be caught on a certain day for a urine sample. This arbitrariness was intensified by problems in the technique of urinalysis itself, having to do with variations in personal metabolism and laboratory procedure. Residues of heroin used two days previously might be identified in the urine of one individual, while heroin shot hours before testing might not be detected in another addict. Drinking beer prior to giving a urine sample would often dilute the sample so that no heroin was detectable. False positives were also not unknown in urinalysis: even when urines were split into two portions for separate urinalysis, the results rarely agreed (C. Lidz, personal communication). Thus addicts did not experience urinalysis as an objective system of surveillance in which if one had cheated program rules one was caught. Rather, they experienced urinalysis as a form of unpredictable Russian Roulette. Staff, however, noting the BNDD licensing of laboratories and the high prices for urinalysis, had to take the official line that

urinalysis results were accurate, and a fair method of catching those individuals who broke program rules.

Given the addict experience of the arbitrariness of urinalysis, there was a widespread belief by addicts that staff members switched urine samples, either to protect friends, earn bribes, or hurt enemies. This was often interpreted by psychiatric staff as a magical or paranoid belief system. Similarly a widespread addict response to urinalysis results was to claim that the outcomes were simply wrong. This was seen by staff as denial in the psychiatric sense. Finally addicts tended to respond to being caught with a dirty urine by becoming angry. Indeed, anger is a rational response to a situation where a series of low-probability outcomes (day urine requested, metabolism, accuracy of urinalysis, etc.) all coincide causing the addict to be caught. Yet anger was seen by staff as addicts' refusal to take personal responsibility for their actions.

A similar mutual unintelligibility underlay staff and client views of involuntary or punitive detoxification, where again addicts viewed the punitive process as arbitrary and ill-intentioned. Program rules were fairly specific: if a client continued using illegal drugs for long after entering the program, the client would first be verbally warned, and then obliged to sign a contract agreement that more "dirties" would result in detoxification and termination from the program. This organizational rule reflects federal and state regulations.

As indicated, the timing and results of urinalysis exhibit a degree of randomness. But in addition, an examination of program records revealed that the number of dirty urines permitted before one received a contract varied according to counselor, concurrent level of administrative strictness, frequency or imminence of audit, etc. Even after a contract was written, the actual number of dirty urines tolerated could vary.

Yet even after the contract was deemed violated and detoxification begun, a further mystification occurred. Clients saw the *process* of the 21-day "detox" as *itself* the punishment, rather than seeing

their subsequent *termination* from the program as the *real* punishment, with detoxification merely a technical means of withdrawing methadone prior to termination (Attewell et al., 1976). Although federal regulations set the minimum time for detoxification at 14 days, addicts felt that even 21 days was so abrupt that one suffered severe withdrawal pains. Forty-five percent of the clients interviewed in our interview sample (Judd and Gerstein, 1975; Attewell et al., 1976) objected specifically to the length of detoxification. Allied to this was the knowledge that expulsion from the program—ostensibly the *real* punishment—was manipulable. Addicts could, and did, return to the program very shortly after being punitively detoxified. Detoxified patients were sometimes on the rolls again within two weeks. Thus, addicts saw the punitive response of the program as centering on the physical pains of detoxification, rather than the moral censure of expulsion or exclusion from treatment.

What then was the consequence of this contradiction between staff and addict world views? Given this context of unpredictability concerning detection of illegal drug use, unpredictability of program response, and addict redefinition of the termination process, a significant proportion of clients denied the fairness or validity of the system of punitive governance upon which the clinics operated. Combined with the various humiliating rules, e.g., viewing one urinating etc., this led to many addicts taking an alienated and instrumental view of the program. Many began a cyclical revolving-door pattern of program involvement: repeated entries to clinics, detoxifications due to continued drug use, and subsequent reentries to treatment after weeks or months on the street hooked on heroin. This was abetted by federal documentation rules which enabled expatients to rapidly reenter, while new addicts, who never previously had been treated, would often have to hang on for weeks or months, awaiting documentation. The program, meanwhile, was able to keep up its case census by admitting "retreads," some up to six times in a four-year period.

This type of career virtually coopted methadone maintenance as a complementary adaptation to preexistent street life. Typical street heroin use involves a period of sporadic shooting (injecting) which escalates to a daily fixed-interval schedule, reinforced by the onset or threat of withdrawal. But the body learns to tolerate a given mean level of heroin, and addicts often respond by taking larger doses. This procedure has finite limits, because money and heroin become relatively hard to get in ever-larger quantities. Addicts responded to this, prior to the existence of methadone maintenance, by experiencing withdrawal pains frequently and eventually going cold turkey (withdrawing from heroin), often in jail. Later, the pattern of injecting would start over.

This stereotypical picture of periods of addiction interspersed with periods of abstinence, has become modified by the revolving-door methadone maintenance career. (Some 37.5% of addicts in one program studied showed this career type by late 1974; Judd and Gerstein, 1975.) These addicts entered the maintenance program, reduced their heroin use considerably, and ultimately were detoxified and expelled for not quitting completely. They resumed full-time street use of heroin until their tolerance got too high, legal or personal problems grew unmanageable, or their heroin connection dried up. Then they reentered the program. Methadone maintenance provided a cushion for such people, by helping them control their heroin needs, and keeping them out of prison.

This creative cooptation of methadone maintenance did interfere with those addicts in treatment who were motivated to avoid heroin entirely, and was not exactly beloved by revolving-door addicts, since it involved continual harassment and degradation by a plethora of treatment practices. But as a "rational" response to an institutional pattern which preached treatment and practiced control, this career pattern, of using treatment to buffer the more unmanageable aspects of addiction, is strikingly symbiotic. The encumbered institutional attempt at treating a social problem produced its antithesis in

addicts' use of treatment to solve their own problems.

The Dilemmas of Compliance

We have indicated above that the addict's experience in treatment involved on the one hand a routine of repetitively demeaning rituals, and on the other a series of uncertain and/or irregular surveillance and punitive measures. This combination, we have argued, is demoralizing for addicts, leads to an alienated and instrumental perspective, and does little to encourage respect for the program. One possible explanation for this could be that these negative consequences result from a lack of adequate bureaucratization, rather than a surfeit (cf. Perrow, 1972). In other words, residual particularistic attitudes (constant bending of rules regarding detoxification, etc.) rendered unpredictable an otherwise rational system of treatment as defined by the FDA.

In countering this "underbureaucratization" thesis we have to demonstrate two things. First we shall show that particularism was not some peculiar aberration of the clinics studied but on the contrary was a necessary consequence of the organizational structure imposed on methadone maintenance. Secondly, we shall argue that clinical practices were not hindered by particularism per se, but rather by the undermining of such particularism resulting from increased attention to FDA and state regulations. In explaining these processes we shall use Etzioni's (1961) work on compliance in which he distinguishes between three types of organizations (coercive, remunerative and normative), each of which employs a specific set of tactics in gaining the compliance of its participants.

From our preceding review of methadone treatment, it becomes apparent that programs have difficulties in using any of the typical organizational constraints or compliance mechanisms to control addict-clients. For example, coercive compliance depends above all upon physically restraining an individual from leaving an institution. Even though addicted to methadone, the addict in

treatment does have the option of quitting the program and returning to street narcotics. Thus, methadone programs cannot effectively operate as coercive organizations.

Remunerative compliance requires a set of variable rewards which may be adjusted to match a subordinate's behavior, and hence entice the subordinate to follow organizational rules. Unfortunately, methadone programs' abilities to marshal such rewards were very limited. Therapeutic offerings such as counselling were not perceived as rewards; indeed, we saw earlier that addicts had to be forced to attend counselling sessions. One possible reward structure—allowing methadone dosage to slide up and down according to good behavior—was ruled out by physicians' ethical objections to utilizing medication as a variable reward. The only other meaningful reward, take-home privileges, had been curtailed and made inflexible due to BNDD and other external pressure. Thus there was a paucity of remunerative compliance in methadone clinics.

The third type, normative compliance, was similarly hamstrung. As Etzioni argued, normative mechanisms (e.g., rituals of solidarity, prestige and status rewards, exclusion, moral stigmatization, etc.) only work in a situation where participants have a high degree of commitment to organizational goals. The various degrading and status-deflating aspects of methadone maintenance, e.g., LD cards, urine monitoring, punitive rules, all acted to destroy any possibility of status or prestige rewards and hence undermined the basis for normative compliance.

Normative control was similarly encumbered in terms of its major negative sanction: expulsion and moral stigmatization. There was a contradiction between the use of exclusion or expulsion as a compliance/control device, and culturally dominant notions of medical treatment. Having successfully defined themselves as providers of medical treatment, programs could not exclude on a long-term basis those expelled exclients who had returned to the street and become readdicted. To do so would be to deny a

sick person medical treatment, which bites too deeply into social mores and taboos. Thus, because of the medical definition, programs could neither effectively exclude rule breakers, nor, after readmission, deny them any of the treatment provisions of the program. Methadone programs therefore had to live with their own treatment failures. Consequently, programs totally lacked any effective negative sanctions for normative control of erring subordinates.

In sum, most of the major mechanisms which complex organizations typically utilize for controlling subordinate participants were absent or unavailable in the case of methadone maintenance programs. Programs were therefore unable to mold effectively the behavior of their addict-clients.

In such a situation the only remaining lever for obtaining compliance involved the use of personal loyalties between staff and clients generated in the day-to-day life of the clinic and in counseling sessions. These friendships produced respect and trust, feelings of mutual understanding and personal obligation. To be kicked out of a clinic involved loss of face to some addicts, not because they felt committed to the program per se, but because they had betrayed the personal trust of a specific staff member to whom they felt obligated. To the extent that a counselor believed and acted as though a client was an individual worthy of being trusted—by imbuing the relationship with importance and solidarity—a counselor could impose such a personal commitment upon the client, which might be reciprocated.

The major method of imposing such a commitment and establishing mutual respect involved treating a person individually rather than as a typical case among many. Particularistic behavior thus meant special treatment, making exceptions to rules, doing more than the standard minimum. By being flexible with rules, a counselor could show that he/she cared, understood the client as a particular individual with special problems, and had enough trust to go out on a limb. In a situation where few other bases for gaining compliance existed, for the reasons out-

lined above, the particularism of program staff became a crucial organizational resource for compliance.

How then does this fit into our wider framework? We have shown that particularistic decisions by counselors were made on the basis of, in Weber's term, substantive justice. The historical intensification of bureaucratic routinization in the clinics, in response to external pressure towards strict enforcement of government regulations, favored formal justice—enforcing rules universalistically, without regard to particular circumstances. But the insistence on increasing formal rationality fatally undermined the particularistic basis of clinical compliance. As the counselors were denied discretionary powers, they became simple enforcers of rules, urine monitors, while the clients, treated more and more as cogs in a metered dispensing machine, increasingly were removed from sources of commitment to treatment.

Thus the mounting pressure to comply with the externally mandated rules intensified the contradiction between strict universalistic application of program rules (designed to prevent abuse of methadone), and a particularistic therapeutic outlook designed to change addicts' behavior. As programs attempted to respond to outside agencies by strictly enforcing federal and state regulations they simultaneously became the agents of their own therapeutic demise.

Summary and Conclusion

In this paper we have tried to give a developmental perspective on methadone maintenance and to link macrosociological levels to the experiences of participants. Methadone maintenance was an attempt to reintroduce a medical treatment model for heroin addiction after 50-year history of punitive prohibition. Government agencies, principally the FDA, succeeded in gaining an early jurisdictional mandate to control these medical interventions. Its model protocol redefined the parameters of methadone maintenance away from the original intentions of Dole and Nyswander, and incorporated the ob-

jections of the BNDD and medical critics into its protocol stipulations. Programs had little choice but to accept this redefined model of methadone maintenance. They were in a situation of lopsided dependency upon federal and state licensing, surveillance, and funding agencies, and upon the goodwill of local media and local government. Since all these institutional actors took the FDA protocol as the template against which to evaluate local programs, such programs had to appear to succeed according to the FDA model. Programs made elaborate efforts at manipulating their public image in order to maintain the support of those external agencies. As surveillance intensified, this involved an increasing attempt at strict compliance with federal and state regulations. These efforts in turn led to intense role conflicts within clinic staff, and alienation and mystification among addict clients. The already limited bases of organizational compliance in the clinics became further undermined, and an adaptational client role—the revolving-door syndrome—grew increasingly prevalent.

Generalizing from the particular case of methadone, we can derive certain insights into the workings of government policy in general, and return to the debate with the Pressman-Wildavsky position described earlier. The first thing to note is that the strength of government policy in this area (in contrast to their notion of federal impotence) derived primarily from the monopsonic position of government as buyer of certain services, such as methadone maintenance. In such monopsonic situations where government is faced with a myriad of competing sellers, and where a non-governmental market for the services barely exists, one is likely to find a much greater degree of "potency" to government policy than elsewhere.

Secondly we see that government policy is frequently contradictory in the sense that it embodies conflicting principles of action. In the case of methadone maintenance this involved the multiple goals of limiting methadone to specific subpopulations, and of strictly policing its distribution, while simultaneously attempting to

set up a successful clinical milieu. Such conflicted policies are likely to emerge, we would suggest, in many instances of policy making precisely because of the political context of federal agencies. In our case the FDA, attempting to appease or coopt both friends and foes of methadone maintenance, allayed the criticism of foes via a hedge of restrictive regulations. This attempt by government policy regulations to appease all interested parties is quite general, especially in contentious areas. It is frequently a prerequisite for obtaining the necessarily broad political support required for the passage of enabling legislation, and also stems from the policy bureaucracy's desire to minimize conflict and opposition to its plans. In most cases this kind of policy-making behavior leads mainly to an excess of regulation and lack of flexibility. At its worst, it results in quite incompatible demands being included in policy and placed upon local implementing agencies.

The impact of such compromised policies is particularly severe in contexts of monopsony or lopsided dependence of local agencies on national government. Agencies then have to involve themselves in institutional presentation-of-self, which involves actively selling their ability to perform contradictory tasks, in order to obtain central financing. Any attempt to fight the irrationalities in policy would simply result in some other competing organization receiving funding.

Finally the manner by which these policy demands have their impact at the program level involves a displacement of program goals towards sustaining funding via strict adherence to government regulations and active presentational work. But compromised policies also impact upon programs by restricting their organizational resources for gaining the motivated compliance of subordinates. Many organizations under the best of circumstances find it difficult to develop an effective reward structure and an appropriate form of normative, remunerative, or coercive compliance mechanisms. But under the burden of detailed government regulations such resources may be severely limited, leading to organizational failure due to paucity of rewards. Alternatively, as in

the case of methadone maintenance, government policy may mandate the use of quite incompatible compliance mechanisms, e.g., normative alongside coercive control, in which case the programs begin to unravel from within as they cannot hold the loyalty or commitment of their members. In either case government policy unwittingly forces programs into presiding over their own demise: the closer the programs attempt to obey the dictates of government, the worse become their problems of organizational control.

Thus far from conceptualizing government policy as impotent on the local level and regarding outcome as detached from policy, we recommend, at least in the context of governmental monopsony, a model which emphasizes the power of policy and of its consequences, both intended and unintended, upon local practice.

REFERENCES

- Attewell, Paul A., Lewis L. Judd and Dean R. Gerstein
1976 "A client evaluation of involuntary detoxification from methadone." *Proceedings of the National Conference on Drug Abuse*.
- Ausubel, David P.
1966 "The Dole-Nyswander treatment of heroin addiction." *Journal of the American Medical Association* 195:949-50.
- Becker, Howard S.
1963 *Outsiders: Studies in the Sociology of Deviance*. New York: Free Press.
- Brecher, Edward M. and the Editors of Consumer Reports
1972 *Licit and Illicit Drugs*. Boston: Little, Brown.
- Brill, Leon
1973 "Introductory overview: historic background." Pp. 5-40 in C.D. Chambers and Leon Brill (eds.), *Methadone: Experiences and Issues*. New York: Behavioral Publications.
- Brill, Leon and Carl D. Chambers
1973 "Summary and conclusions." Pp. 347-65 in C.D. Chambers and Leon Brill (eds.), *Methadone: Experiences and Issues*. New York: Behavioral Publications.
- Chambers, Carl D. and Leon Brill (eds.)
1973 *Methadone: Experiences and Issues*. New York: Behavioral Publications.
- Chambers, Carl D. and W. J. Russell Taylor
1971 "The incidence and patterns of drug abuse during maintenance therapy." Paper presented to the annual meeting of the Committee on Problems of Drug Dependence, National Research Council, National Academy of Sciences, Division of Medical Sciences, Toronto.

- Diaz, William A. and Stephen M. David
1972 *The New York City Addiction Services Agency 1971-1972*. New York: Fordham University Institute for Social Research.
- Dole, Vincent P. and Marie E. Nyswander
1965 "A medical treatment for diacetylmorphine (heroin) addiction: a clinical trial with methadone hydrochloride." *Journal of the American Medical Association* 193:646-50.
1966 "Narcotic blockade: a medical technique for stopping heroin use by addicts." *Archives of General Medicine* 118:304.
1967 "Heroin addiction: a metabolic disease." *Archives of General Medicine* 120:19.
1976 "Methadone maintenance treatment: a ten-year perspective." *Journal of the American Medical Association* 235: 2117-9.
- Espada, Frank
1977 "Contemporary government policy: response." *Proceedings of the National Conference on Drug Abuse*.
- Etzioni, Amatai
1961 *A Comparative Analysis of Complex Organizations: On Power, Involvement, and Their Correlates*. New York: Free Press.
- Finney, Graham S.
1975 *Drugs: Administering Catastrophe*. Washington, D.C.: Drug Abuse Council.
- Gerstein, Dean
1975 *Heroin in Motion: A Working Paper in the Theory of Action*. Ph.D. dissertation, Department of Sociology, Harvard University.
1976 "The structure of heroin communities (in relation to methadone maintenance). *American Journal of Drug and Alcohol Abuse* 3:571-87.
- Goffman, Erving
1959 *The Presentation of Self in Everyday Life*. Garden City: Doubleday.
- Gould, Leroy, Andrew L. Walker, Lansing E. Crane and Charles W. Lidz
1974 *Connections: Notes from the Heroin World*. New Haven: Yale University Press.
- Holzman, Paula and Irving E. Lukoff
1976 "A plea for the long route: an evaluation of methadone maintenance and other short cuts to the cure of heroin addiction." Unpublished paper.
- Hunt, Leon and Carl D. Chambers
1976 *The Heroin Epidemics: A Study of Heroin Use in the United States, 1965-1975*. New York: Spectrum.
- Isbell, Harris and Victor H. Vogel
1949 "The addiction liability of methadone (amidone, dolophine, 10820) and its use in the treatment of the morphine abstinence syndrome." *American Journal of Psychiatry* 105:909-14.
- Judd, Lewis L. and Dean R. Gerstein
1975 *Follow-Up and Evaluation Study of the UCSD-San Diego County Narcotic Treatment Program, 1970-1974*. Department of Substance Abuse, San Diego.
- Lindesmith, Alfred
1965 *The Addict and the Law*. Bloomington: Indiana University Press.
- Mandell, Arnold J.
1971 "The sociology of a multimodality strategy in the treatment of narcotics addicts." *Journal of Psychedelic Drugs* 4:132-7.
- Musto, David
1973 *The American Disease: Origins of Narcotic Control*. New Haven: Yale University Press.
- Nelkin, Dorothy
1973 *Methadone Maintenance: A Technological Fix*. New York: Braziller.
- Perrow, Charles
1972 *Complex Organizations: A Critical Essay*. Glenview: Scott-Foresman.
- Pressman, Jeffrey L. and Aaron B. Wildavsky
1973 *Implementation*. Berkeley: University of California Press.
- Proceedings of the National Conference on Methadone Treatment
1971 *Proceedings, Third National Conference on Methadone Treatment, November 14-16, 1970*. Public Health Service Publication No. 2172. Washington, D.C.: U.S. Government Printing Office.
1972 *Proceedings, Fourth National Conference on Methadone Treatment, January 8-10, 1972*. New York: National Association for the Prevention of Addiction to Narcotics.
- Soloway, Irving H.
1974 "Methadone and the culture of addiction." *Journal of Psychedelic Drugs* 6:91-9.
- Thompson, James D.
1967 *Organizations in Action*. New York: McGraw-Hill.
- U.S. Food and Drug Administration
1970 "Conditions for the investigational use of methadone for narcotics addicts." Reprinted as pp. 23-40 in Carl D. Chambers and Leon Brill (eds.), *Methadone: Experiences and Issues*. New York: Behavioral Publications.

COMMENTS

"EQUALITY, SUCCESS, AND SOCIAL JUSTICE IN ENGLAND AND THE UNITED STATES": A COMMENTARY AND CRITIQUE

(COMMENT ON ROBINSON AND BELL, *ASR* APRIL, 1978)*

In the lead article in the April 1978 *ASR*, Robinson and Bell present an analysis of the contrasting orientations toward "Equality, Success, and Social Justice in England and the United States." The article suggests some bases for expecting differences between the two societies, and data are analyzed to test these ideas. Although this is an interesting exercise, the article is flawed in ways which lead the authors to conclusions that are not well-supported by their data, and they ignore findings that have a much stronger empirical base. The purpose of this comment is to identify some of the weaknesses in the Robinson-Bell discussion and to suggest some observations the authors might have been led to had they conducted their analysis in a more appropriate manner.

In order to put this discussion in a meaningful context, however, it first will be necessary to summarize the basic ideas in the article. Robinson and Bell state (p. 126) that:

... our first purpose is to uncover the causes of variations in individual judgments about the fairness of equality or inequality. We propose an explanatory model using path analytic techniques.

Our second purpose is to test the generalizability of the model by its application to data from two societies, England and the United States.

They then discuss briefly their reasons for expecting differences in ideas about equality in the two countries and introduce the data set, consisting of responses from 113 residents of New Haven, Connecticut, and 101 residents of London, England.

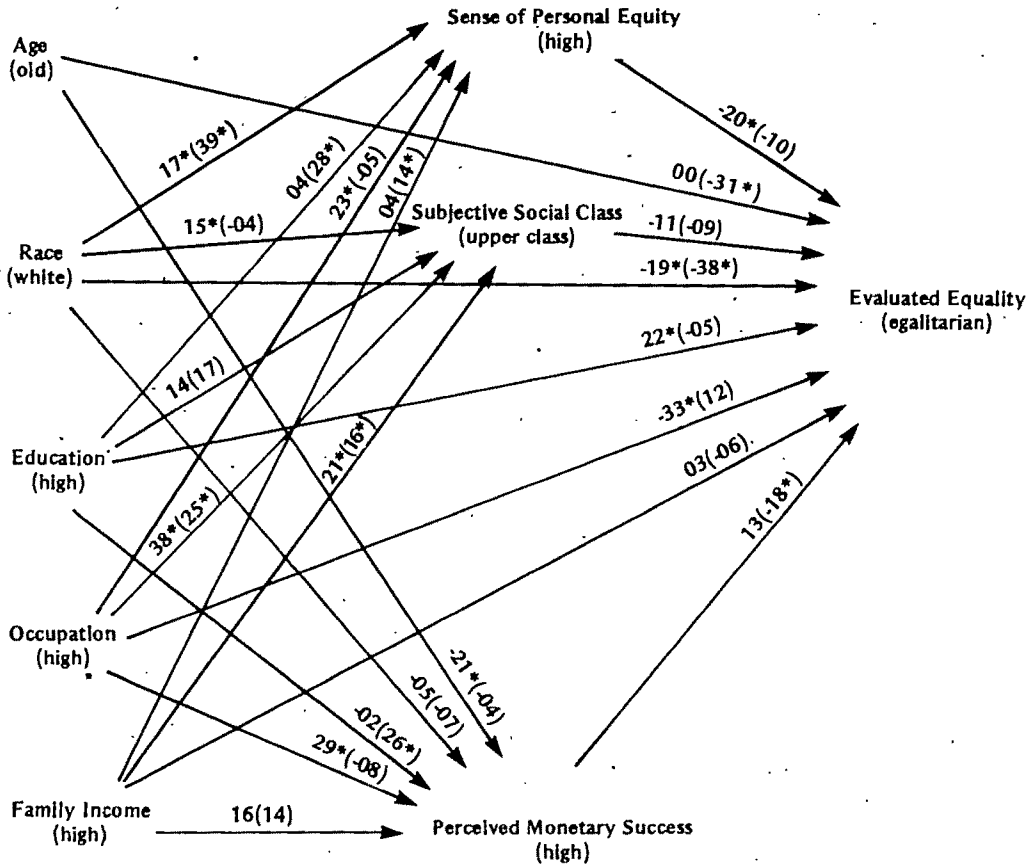
The dependent variable of primary interest is a five-item Index of Evaluated Equality, the items of which are in normative form ("should," "it would be more fair," etc.). For instance, one item is: "It's fair that rich people who can pay their fines stay out of jail while poor people may have to go to jail for the same crime." In addition, three other subjective measures are used. One is the respondents' self-placement in one of five social classes (upper, upper-middle, middle, working, lower).

Another is a one-question measure of the respondents' sense of personal equity ("In general, do you personally have the standard of living that you feel you deserve?"). The third is a one-question measure of the respondents' perceived achievement of monetary success ("... tell me how close you have come—or think you *will* come—to ... really getting ahead by earning a lot of money"). These three measures are referred to as Subjective Social Class, Sense of Personal Equity, and Perceived Monetary Success.

The analysis consists of examining the associations among these variables and between them and a set of sociodemographic variables: age, race, education, occupation, and family income. The analysis is organized around three general principles. (1) The Underdog Principle: This leads to the expectation that those who benefit from the stratification system's distribution of rewards will be more likely to view inequalities as just. (2) The Principle of Enlightenment: Those who are more highly educated, other things equal, will view inequalities as unjust. (3) The Principle of an Historical Shift toward Egalitarian Zeitgeist: Younger people will be more likely than older people to see inequalities as unjust. Differences between England and the United States are cited as possible sources of deviation from some of these principles.

After presenting a path model, a table of correlations, and a path analysis, the authors reach a number of conclusions. In general, the results are judged to support the Underdog Principle. They are judged to contradict the Enlightenment Principle in the United States but to be consistent with it in England, a finding that seems "to run counter to the widely held idea that British education inculcates elitist values compared with the more egalitarian values of American education" (p. 140). The Historical Shift Principle seems to hold in the United States, but not in England. In addition, the authors conclude that their findings are consistent with the idea that an English cultural belief that theirs is a just society reduces their sense of injustice due to inequality. Similarly, the authors believe that the findings suggest that in the United States the cultural belief that monetary success is equally open to all seems to serve the same function, to reduce the sense of injustice due to inequality. The authors' most sweeping conclusion is that: "Our findings support the generalization that every society, in the face of its particular historical contingencies, provides a rationale, myth or belief, that enables its members to

* Address all communications to: Alan C. Kerckhoff; Department of Sociology; Duke University; Durham, NC 27706.



* Decimals omitted; selected paths only.

* Path is significant at $p < .05$, one-tailed test.

Figure 1. Reproduction of Robinson and Bell's Path Model Explaining Evaluated Equality in England and the United States

cope with their position in the stratification system" (p. 141).

These conclusions have a fine ring to them, and they may be true, but, unfortunately, the data presented form an inadequate basis for them. Although there are many technical flaws in the article,¹ these are not our central concern here. Rather, we wish to focus on issues which cast doubt on the inferences drawn from the study and which would remain even if the technical flaws were repaired and the findings remained the same as originally reported. There are four issues relating to the authors' approach to the analysis and their interpretation of the results. These are: (1) the use of a path model the organization of which cannot be

justified, (2) the failure to examine metric coefficients, (3) the confusion between distributional and associational statistics, and (4) the interpretation of nonsignificant results. Each of these will be considered. Then, in a concluding statement, we will reexamine the study's findings from a different perspective.

(1) *The path model.* We have reproduced here one of Robinson and Bell's figures which indicates the structure of their path model and also reports the estimated path coefficients. Perhaps our most basic criticism of their analysis is that the model unjustifiably establishes an order among the four subjective measures which makes Evaluated Equality *dependent upon* Sense of Personal Equity, Subjective Social Class and Perceived Monetary Success. No justification is given for this ordering, and, we would submit, none is possible. All four measures are taken at the same point in time, so no temporal order is involved. There is no more reason to say that Evaluated Equality is affected by the others than there is to say that they are affected by it. The four are actu-

¹ These include: (a) an inadequate description of the sample, including no indication of the sex or age composition; (b) the use of the term *correlation* in numerous places where the reference is to a path coefficient; (c) incomplete descriptions of variables, such as saying that the Subjective Social Class measure is based on two items without indicating what they were or how they were combined.

Table 1. Effects of Sociodemographic Variables on Subjective Measures

	American Results							
Independent Variables	Sense of Personal Equity		Subjective Social Class		Perceived Monetary Success		Index of Evaluated Equality	
	b	beta	b	beta	b	beta	b	beta
Age	.011*	.210	.008*	.182	-.003	-.038	-.086*	-.342
Race	.987*	.393	-.097	-.046	-.246	-.063	-4.702*	-.401
Education	.167*	.281	.088	.176	.240*	.262	-.369	-.133
Occupation (Duncan's SEI)	-.004	-.057	.013*	.258	-.008	-.082	.033	.113
Family Income	.002*	.139	.002*	.159	.003	.134	-.007	-.111
R ²	.333		.206		.084		.342	
	British Results							
	b	beta	b	beta	b	beta	b	beta
Age	.007	.128	.003	.089	-.018*	-.200	-.015	-.059
Race	.473*	.171	.284*	.147	-.229	-.048	-3.250*	-.244
Education	.023	.033	.066	.138	-.015	-.013	.663	.202
Occupation (Duncan's SEI)	.014*	.238	.016*	.383	.030*	.287	-.110*	-.383
Family Income	.006	.038	.002*	.204	.004*	.166	.002	.024
R ²	.119		.342		.207		.207	

ally coequal subjective measures. Only a strange theory of intrapsychic dynamics could possibly justify the use of this model, and such a theory is not offered in the article.

We have used the data Robinson and Bell report in their article to compute the simpler, more defensible model in which Evaluated Equality is dependent on the five sociodemographic variables. The resulting coefficients are reported in the far right panel of Table 1. They are not greatly different from those reported by Robinson and Bell in Figure 2. However, one coefficient that was significant in their analysis is not significant here—the education coefficient in England.² The effect of education on Evaluated Equality is significant in England only net of the other sociodemographic variables and the other three subjective measures. Although the education coefficients are of opposite signs in the two countries (a point commented on by Robinson and Bell), neither is statistically significant. Thus, in England only race and occupation have significant effects on Evaluated Equality, and in the United States only race and age are significant.

(2) *Metric coefficients.* Robinson and Bell present only standardized coefficients, as in their Figure 2 presented here. This is done in spite of their careful attempt to use comparable measures in the two countries.³ Since com-

parable measures are used, and since some variances differ between the two countries, it is clearly important to examine the metric as well as the standardized coefficients. Both sets of coefficients are presented in Table 1.

No particular contrast between the two sets of coefficients is noteworthy in the Evaluated Equality equation, but the Subjective Social Class equation does show a notable contrast. Robinson and Bell point out that Subjective Social Class "is more highly related to objective measures of socioeconomic position in England than in the United States. This is true, for example, of occupation and income, though not education" (p. 136). It is true, of course, that the R² for Subjective Social Class is larger in England. However, the metric coefficient for family income is identical in the two countries (.002), and the occupation metric coefficient is very similar (.013 in the U.S., .016 in England). Actually, the major difference in the two countries is the strong effect of age in the U. S. and of race in England. Robinson and Bell's interpretation of these data as supporting Lipset's and Alford's notions of greater lower-class consciousness in England is hardly justified.

(3) *Associational and distributional statistics.* A major conclusion reached by Robinson and Bell is that in each of the two countries there is a "cultural belief" which functions to soften negative reactions to inequalities. In

² Robinson and Bell use a one-tailed test and the .05 level in determining statistical significance. We have followed this practice also for the sake of comparability when dealing with the tests associated with directional hypotheses.

³ It is, of course, often necessary to restrict one's attention to standardized coefficients when conducting comparative research since the variables are not

always measured in the same metric. We have been limited in this way in some of our own research. In this case, however, the same metrics were used throughout in the two countries.

England, they suggest, it is the belief that the society is basically a just one, and thus one's lot in life is reasonable by standards of fairness. In the U.S., it is the belief in the possibility of "rags to riches" mobility in the stratification system, a belief which tends to legitimize the position of those higher in the system. Within the study, these are indexed by Sense of Personal Equity and Perceived Monetary Success, respectively. There is a lack of clarity in their discussion of these societal differences, however, which makes their case appear to be more persuasive than it is. Although they at times acknowledge that it is the differences in the associations between these beliefs and the sociodemographic variables, in the two societies that is important to their argument, they also make comments that suggest that there are societal differences in the salience of these cultural beliefs. For instance, in their final paragraph, they refer to "the modest difference between the two countries in how widely held these beliefs are" (p. 141). In fact, there is no difference between the two societies in these beliefs. The means for Sense of Personal Equity are 2.46 and 2.33 for England and the U.S., respectively, with standard deviations of more than .9 in both cases. The means for perceived Monetary Success are 2.70 and 3.06, respectively, with standard deviations of more than 1.4 in both cases. Clearly, these means are not significantly different. There are also only nonsignificant differences in the societal correlations between these measures and Evaluated Equality. The correlations with Sense of Personal Equity are significant in both the U.S. (-.38) and England (-.31), and the correlations with Perceived Monetary Success are nonsignificant in both the U.S. (-.15) and England (.03). It is *only* in a multivariate analysis such as reported in Figure 2 that these subjective measures are differentially "functional" in the two countries. We will return to this point in our concluding discussion.

(4) *Interpretation of non-significant results.* Robinson and Bell conclude that their Underdog Principle is generally supported by the analysis since six of the eight path coefficients for race, education, occupation and income in the Evaluated Equality equations have the predicted signs. Yet, as Table 1 shows, only three of those eight paths are statistically significant, even using a one-tailed test at the .05 level (race in the U.S., race and occupation in England). The Principle of Enlightenment receives no support in either country, and the Principle of an Historical Shift is supported by the significant negative age coefficient in the U.S., but not in England. This is hardly strong support for any of the three principles, especially considering that the Underdog and the

Enlightenment Principles call for opposite results for the education coefficient.

Conclusions. It is difficult to understand how Robinson and Bell, faced with these results, reached the conclusions they did. Their conclusions focus, first, on the extent of support for the three principles. As we have just indicated, none of the three receives consistent support, and the inconsistencies, both within and across societies, are not easily explained. And the article does not present explanations for them.

It is clear, however, that Robinson and Bell are more interested in what they call one of their "discoveries," the partial associations between Evaluated Equality on the one hand and Sense of Personal Equity and Perceived Monetary Success on the other, with the sociodemographic variables held constant. We have criticized their use of a path model which makes the other subjective measures "causes" of Evaluated Equality. Yet, it is true that, if a more appropriate analysis is conducted, similar results are produced. In effect, Robinson and Bell wish to test the idea that the correlations between the pairs of subjective measures are a result of their mutual dependence on the sociodemographic variables. Their argument about the intersocietal differences is basically that there is this mutual dependence in the U.S. with respect to Sense of Personal Equity and in England with respect to Perceived Monetary Success, but that the reverse is not true. An appropriate test of this idea is to compute the partial correlations between the pairs of subjective measures, with the sociodemographic variables controlled for. If this is done, the resulting partial-correlations are: in England, $EE/SPE = -.20$, $EE/PMS = .10$; in the U.S., $EE/SPE = .12$, $EE/PMS = .23$. The SPE coefficient is significant in England but not in the U.S., and the PMS coefficient is significant in the U.S. but not in England.⁴

Yet, even if these partial coefficients are viewed as having some limited importance, it is difficult to see why they came to assume such a central place in the Robinson and Bell discussion. Much more massive intersocietal differences appear in the findings, but they pass almost unnoticed. Also, the analysis is not really in a form that is easily interpreted on the basis of the previous stratification discussions which are repeatedly cited. In conclusion, then, we will present a different view of these data which we think would have led the authors in a very different direction.

The basic purpose of the investigation, we

⁴ It may be worth noting, however, that the difference between the coefficients in the two countries is significant in the case of PMS but not SPE.

are told, was "to uncover the causes of variations in individual judgments about the fairness of equality or inequality" and "to test the generalizability of the model" to the two societies. The discussion of the findings is generally couched in terms of social stratification analyses in which such theorists as Lipset and Turner have compared the two societies. Yet there are two variables included in this study that these previous theorists have not dealt with: age and race. There is little basis in previous studies or theoretical discussions to generate expectations of intersocietal differences in the effects of these variables. Yet, the findings suggest massive differences between England and the U.S. in the effects of these variables, and, once they are removed from the analysis, the findings using the more commonly discussed variables of education, occupation and income are also dramatically different than they appear to be in the original report. These differences are worth noting.

In Table 2 we report the reduced form equations in which the four subjective measures are regressed on the two subsets of sociodemographic variables. In the first rows the effects of age and race are reported, followed by the effects of education, occupation and income (which we will refer to as the stratification variables). The full equations, using all five variables are in Table 1. We find that age and race are not particularly important in explaining Subjective Social Class in either country,

although the race path is significant in England. When just the three stratification variables are used, the intersocietal difference with respect to the explanation of variance in Subjective Social Class is similar to that in Table 1. With respect to Perceived Monetary Success, age has a significant effect in the U.S. but not in England, but the three stratification variables again produce very similar results by themselves as does the full set of five variables in Table 1.

However, very different outcomes are found with respect to the other two subjective variables. In the U.S., race has a massive effect on Sense of Personal Equity, but it has a much more modest effect in England. As a result, the R^2 is reduced by over two-thirds when race and age are deleted from the full American equation (compare with Table 1), but by only about one-third in the English equation. When only education, occupation and income are used as explanatory variables, the R^2 's in the two countries are very much more similar than when age and race are included.

An even more dramatic effect is seen with respect to Evaluated Equality, Robinson and Bell's central measure. In the U.S., the three stratification variables explain only .1% of the variance, while in England they explain nearly 15%. Age and race alone explain 32.3% of the variance in the U.S. but only 11.2% in England. Clearly, these are very great intersocietal differences. The traditional stratifica-

Table 2. Reduced Forms of Equations for Sociodemographic Effects on Subjective Measures

	American Results							
Independent Variables	Sense of Personal Equity		Subjective Social Class		Perceived Monetary Success		Index of Evaluated Equality	
	b	beta	b	beta	b	beta	b	beta
Age	.005	.086	.003	.066	-.013	-.153	-.070*	-.279
Race	1.200*	.478	.196	.093	.038	.010	-5.014*	-.428
R ²	.257		.016		.023		.323	
	b	beta	b	beta	b	beta	b	beta
Education	.134*	.226	.050	.101	.250*	.272	-.072	-.026
Occupation (Duncan's SEI)	.005	.072	.016*	.302	-.010	-.104	-.016	-.056
Family Income	.001	.111	.001	.120	.003	.140	-.003	-.056
R ²	.103		.180		.077		.011	
	British Results							
	b	beta	b	beta	b	beta	b	beta
Age	.003	.056	-.004	-.116	-.027*	-.303	-.024	-.096
Race	.590*	.214	.451*	.232	.112	.023	-4.117*	-.309
R ²	.052		.062		.091		.112	
	b	beta	b	beta	b	beta	b	beta
Education	-.053	-.078	.025	.053	.121	.102	.980*	.299
Occupation (Duncan's SEI)	.181*	.304	.018*	.436	.025*	.240	-.131*	-.456
Family Income	.001	.034	.022*	.205	.005*	.202	.000	.004
R ²	.077		.315		.175		.147	

tion measures (education, occupation and income) are quite effective in England in explaining Evaluated Equality, but they are not at all effective in the U.S. Conversely, age and race are much more important explanatory variables in the U.S. than in England. Race functions in a similar way in the two countries, but age and the three stratification variables are dramatically different.

Robinson and Bell either did not notice these differences or they viewed them as in some sense less significant than the effects they discuss. The decision as to what is most important to attend to is, of course, the prerogative of the researcher, and we do not fault Robinson and Bell for being interested in cultural beliefs. It is relevant to note, however, that the differential effects of the stratification variables and of race and sex also can be observed in that part of the analysis on which they concentrate so much attention. Given the authors' emphasis on intersocietal cultural beliefs, these differential effects are worth discussion.

The logic of the analysis of the partial relationships Robinson and Bell focus on depends on the differences in the partials in the two countries. In their original analysis, the IEE/SPE partial is significant in England but not in the U.S. and the IEE/PMS partial is significant in the U.S. but not in England. We have noted above that this remains true when a partial correlation analysis is used in place of their original method. However, rather different results are found if the partials are computed using only the three stratification variables. They are: in England, $IEE/SPE = -.24$, $IEE/PMS = +.12$; in the U.S., $IEE/SPE = -.37$, $IEE/PMS = -.14$. Both IEE/SPE coefficients are significant, but neither of the IEE/PMS coefficients is significant. More important, given the Robinson and Bell discussion, the American IEE/SPE is significantly larger than the English, a complete reversal from the conceptualization in the original article. If a similar analysis is conducted, adding race to the set of controlling variables, we get the following results: in England, $IEE/SPE = -.21$, $IEE/PMS = +.10$; in the U.S., $IEE/SPE = -.18$, $IEE/PMS = -.20$. In this case, both IEE/SPE coefficients are significant, and the American IEE/PMS coefficient is significant. However, there is not a significant difference between the IEE/SPE coefficients. In brief, it is *only* when all five sociodemographic variables are controlled that the partial relationships are of the form Robinson and Bell discuss.

It is apparent that race and age are important contributors to the results they report; those results would be very different if age and race were not included. They would even be significantly different if age were not included. The

heavy emphasis in the article on stratification, on inequality defined in terms of class, seems to be misplaced, given these results. Although that is the emphasis to be found in the literature cited, it is not the source of the results reported. Race and age alone explain almost one-third of the variance in the authors' main dependent variable in the U.S. while the stratification variables are wholly lacking in explanatory power, though a very different pattern is found in England. In addition, the partial associations emphasized in the article depend heavily on the use of age and race in the analysis.

It might be tempting to speculate about the reasons for these massive intersocietal differences, but we will not do so for several reasons. First, the basic information about the characteristics of the samples presented in the article is not adequate to justify the exercise. For instance, we do not even know what the age distributions look like in the two samples. Second, the basic sampling design appears to be inadequate for purposes of generating intersocietal comparisons. Not only are the samples small, but they cannot be viewed as societally representative. Third, we are not convinced that the subjective measures used in this study are adequate bases for making such comparisons. Two are one-item and those based on more than one item are not described in such a way as to suggest that they have the desired psychometric characteristics.⁵

All of these are, of course, also reasons to question the adequacy of Robinson and Bell's interpretations of the findings they report. We do believe that their interpretations are inadequately grounded in empirical findings. But, our primary purpose in this discussion is to suggest that, whatever the adequacy of the data base, the paper distorts the findings by ignoring the distinction between race and age on the one hand and the traditional stratification variables on the other and by errors in statistical analysis and interpretation. The

⁵ For instance, the interitem correlations for the items in the Index of Evaluated Equality are reported to average about .2. We are also skeptical that all five items are measuring views of "equality" in the way this term is usually used. One of the items refers to equal distribution of money to all, while the others refer to receiving money according to need, the right of landlords to choose tenants on racial grounds, the differential respect people receive according to occupation, and the ability of some to avoid jail through paying fines. Although the first of these clearly refers to "equality," the others appear to be more concerned with "equity." Besides, their reference to widely varied substantive matters helps explain their low intercorrelations.

basic theoretical notions discussed in the paper, however interesting they may be, remain largely untested. The fact that the paper so clearly suggests otherwise can only delay their effective investigation.

Alan C. Kerckhoff
Robert Nash Parker
Duke University

CONFUSION AND ERROR IN KERCKHOFF AND PARKER: A REPLY*

There is one thing with which we can agree in the commentary by Kerckhoff and Parker: The basic theoretical notions discussed in our paper "remain largely untested." How they could possibly believe that we think otherwise, is a mystery to us since we explicitly labeled our work *an exploratory study* at three key places: in the abstract, the description of the data, and the conclusion.

The data set on which we based our analysis was modest by design. We concentrated our efforts on conceptual clarification and index construction, and we created a measure of attitudes toward equality and inequality, an Index of Evaluated Equality (Bell and Robinson, 1978), which is the dependent variable in the article under discussion (Robinson and Bell, 1978). With our small New Haven and London area samples we aimed to test *in a preliminary way* the empirical and theoretical import of this and other measuring instruments and to explore the relationship between the concepts underlying them.¹ Of course, we hope that other researchers will find the Index of Evaluated Equality useful and that they will test it on large, representative national samples.

Having agreed with Kerckhoff and Parker on this, however, we are forced to conclude that there is little else of merit in their commentary. Rather, their objections reveal unreasonable expectations, confusions, or outright errors.

* Direct all communications to: Robert V. Robinson; Department of Sociology; Yale University; New Haven, CT 06520.

We thank Jonathan Kelley, Bernice A. Pescosolido, Patricia A. Roos, J. L. P. Thompson, and R. Blair Wheaton for their comments on a draft of this reply. Of course, sole responsibility for any errors rests with us.

¹ Additionally, we constructed measurements of alienation (Perkins, 1979; Perkins and Bell, 1979), perceptions of inequality, and perceived achievement of life goals, which we adapted from Meier (1962).

ALLEGED TECHNICAL FLAWS

Inadequate Description of the Sample

Kerckhoff and Parker contend that we do not fully describe our samples and they label this a "technical flaw." In fact, we provided full details on how the samples were drawn in each country; response rates; an assessment of representativeness; means and standard deviations of the demographic variables of age, race, education, occupational prestige, and family income (Table 1); and a description of the racial composition of the two samples (fn. 6). This seems to us an adequate description of data in a journal that reports, as does the *ASR*, a typical maximum article length of ten printed pages.

Furthermore, had Kerckhoff and Parker written us, as other readers did, we would have sent them a 27-page mimeographed account (Bell and Robinson, 1976), the first report we wrote, that might be more appropriately titled, "More Than You Ever Wanted to Know about the Data of the Yale London-New Haven 1975 Survey."

Incomplete Description of Variables

Another "technical flaw" of which we are accused is the failure to fully describe our measure of subjective social class. In fact, the *ASR* copy editor asked us to cut the original, more complete version of footnote 10 where we describe our measures. But, again, if our critics had queried us, we would have sent them a copy of the interview schedule and an explanation. We began by asking an open-ended question to get the picture of the class system as seen by the respondents. After probing their views on the nature of the class structure, we asked, "To which of these classes (as just named by R) do you belong?" If the interviewer then was able to classify the respondent into one of five classes (upper, upper-middle, middle, working, or lower), he or she did not ask the standard closed-answer question on subjective social class. If the interviewer had any doubts, the respondent was handed a card with the five classes printed out and was asked to pick one to describe him/herself.

The Use of "Correlation" in Reference to Path Coefficients

We do use the words *correlate* or *correlation* in a general sense to refer to the fact that variables were shown to be associated, to vary together, or to be in relation as a result of our path analysis. The context makes it fully clear to what we are referring. We note that the practice of Kerckhoff and Parker is to talk

about unspecified "coefficients." Without the context, of course, one could accuse them, as they do us, of confusing the "coefficient" of correlation with the path "coefficient."

The Adequacy of the Index of Evaluated Equality

Inexplicably, Kerckhoff and Parker raise questions about the psychometric characteristics of the Index of Evaluated Equality (IEE), even though we cite a reference (Bell and Robinson, 1978) that could have answered their questions if they had bothered to look it up. Furthermore, they are confused when they question whether the IEE measures equity or equality. We have discussed at some length the difference between these concepts (Bell, 1974); and in Bell and Robinson (1978) we give a full description of the IEE as measuring the social justice of equality or inequality; that is, it measures respondents' *judgments of the fairness or unfairness of specified social equalities and inequalities*.

But Kerckhoff and Parker claim that these "technical flaws" are not their central concern. Rather, they focus on other issues which they erroneously claim cast doubt on the inferences we draw. We take up each of these issues in turn.

ORGANIZATION OF THE PATH MODEL

Kerckhoff and Parker object to the organization of our path model. Specifically, criticizing the causal ordering we propose among the four subjective measures, they argue that such an ordering is impossible since all of these are measured at one point in time. Of course, longitudinal data would be better than cross-sectional data for establishing time priority in a causal sequence of variables. But if we were to require that in the discipline we would have to discount much of current sociology.

Our effort to establish causal direction rests on the use of theory and the heuristic devices of imagined reconstruction of time priority and hypothetical manipulation of variables. In the case of subjective social class and evaluated equality, we assume that identification with a particular class occurs early in the socialization process, as a person's fundamental identity is formed. Judgments about the fairness of equality in the whole society, we assume further, develop later, as a person's consciousness expands and is enlightened by social knowledge. As regards perceived monetary success and evaluated equality, we use hypothetical manipulation of variables. We ask, is it reasonable to expect, if we could alter a person's perception of his or her monetary success, that a

change would occur in the person's judgment of the fairness of equality in the whole society? Our answer is "Yes," because people may generalize from their own experience of success that the system must be fair or from their failure that the system is unfair. To reverse our assumed causal ordering, however, does not work. That is, changing a person's judgment of the fairness of equality in the whole society cannot change the person's belief in his/her monetary success, because the latter is linked to objective facts that are easily perceived, defined by self and others, and classified.

Moreover, even if there are alternative specifications of the path model, it in no way undermines our interpretation, unless it can be shown that some alternative is theoretically more powerful or fits the data better than does ours. Kerckhoff and Parker propose no such alternative on theoretical grounds. Furthermore, their two attempts to conduct analyses which they feel are more appropriate lead them, in the first reanalysis, to find only minor differences from our results and, in the second reanalysis, to conclude that our analysis is correct.

They first propose dropping the three intervening subjective measures from the model (see their Table 1). They find no difference from our results except with respect to the effect of education on evaluated equality which is no longer significant in England. (They fail to say that, even in the case of education, the effect barely fails to reach significance, $p < .06$, and that the difference between England and the U. S. in the effect of education remains significant, $p < .05$.)

The second analysis, which Kerckhoff and Parker propose later in their commentary as an alternative to assuming a causal order among our subjective variables, involves the computation of partial correlations between pairs of subjective measures when the five sociodemographic variables are controlled. They conclude from this: "Yet, it is true that, if a more appropriate analysis [meaning theirs] is conducted, similar results [to those of Robinson and Bell] are produced." Thus, even when Kerckhoff and Parker assume no causal order among the subjective variables, they support our conclusion that the sense of personal equity and perceived monetary success are differentially related to evaluations of equality in England and the U.S.

METRIC COEFFICIENTS

We are criticized for not examining metric, as well as standardized, coefficients. Although we agree that, generally, it is wise to report both metric and standardized coefficients, two

considerations led us to present only the standardized coefficients. First, although the measures we employed had similar wordings in the two countries and although we believed that they measured the same underlying constructs in both countries, we did not know how much faith to put in the equivalence of scoring of measures.² For example, in scoring subjective social class we were not willing to assume that the distance between the working and middle classes is perceived by respondents to be the same in England as it is in the United States. Therefore, we adopted the cautious procedure of reporting only standardized coefficients. This procedure, ironically, also was adopted by one of our critics when he, too, was faced with differences in measures in comparing England and the United States (Kerckhoff, 1974:794; 1978:597).

Second, Hargens (1976:252) recently has argued rather convincingly that standardized coefficients may be more appropriate than unstandardized coefficients in cross-national studies employing stratification variables. This is because standardized coefficients take into account differences between countries in the spread or variance of variables, and, thus, measure the position of the individual "relative to others in the society."

But these considerations aside, what does Kerckhoff and Parker's criticism amount to? For our main dependent variable, evaluated equality, they find "no particular contrast between the two sets of coefficients." They might have stopped there, but they keep comparing their metric with our standardized coefficients until they do find a difference. This is in the contribution of occupation and income to the explanation of subjective social class. But they distort our interpretation. Obviously, we were talking about the *relative* contribution of the independent variables to the explained variance in subjective social class. Occupation, with a direct effect of .38, is a relatively more important variable in England than in the United States where the direct effect is .25. Similarly, family income is somewhat more important as a variable in England, .21, than in the U.S., .16.

We note that, later in their commentary, Kerckhoff and Parker do the same thing that they criticize us for doing. They use not the metric coefficients but the *relative* contribution of independent variables to the explained variance in the dependent variable when they conclude, "Age and race alone explain 32.3% of

the variance [in evaluated equality] in the U.S. but only 11.2% in England. Clearly, these are very great *intersocietal differences*" (italics added). We are puzzled. Why do they criticize us for doing exactly what they do themselves?

ASSOCIATIONAL AND DISTRIBUTIONAL STATISTICS

Kerckhoff and Parker accuse us of confusing associational and distributional statistics in our analysis. In fact, they twist our words into something we did not say and then criticize us for not saying what we actually did say. With respect to country differences in the *distribution* of the cultural beliefs of personal equity and perceived monetary success, they mention that we refer to "the modest difference between the two countries in how widely held these beliefs are," and then they stress that there is *no* difference. There *are*, in fact, differences in our samples, although they are small, which is precisely what we meant in describing them as "modest."³ In the case of personal equity, we say (p. 133) "the two samples are remarkably similar on this variable." In the case of perceived monetary success, however, there is a small, but significant, difference ($p < .05$, one-tailed test) between the English and American samples, contrary to what Kerckhoff and Parker say.

They conclude this point by saying, "It is *only* in a multivariate analysis such as reported in Figure 2 that these subjective measures are differentially 'functional' in the two countries." That, oddly enough, is precisely what we said: "what is crucial is not the modest difference between the two countries in how widely held these beliefs are, but the difference in how they differentially function to support egalitarian attitudes" (p. 141).

INTERPRETATION OF NONSIGNIFICANT RESULTS

Kerckhoff and Parker claim that we do not take account of the significance of results in evaluating support for and against our three principles. They say with respect to the underdog principle:

Robinson and Bell conclude that the Underdog Principle is generally supported by the analysis since six of the eight path coefficients for race, education, occupation and income in the Evaluated Equality equations have the predicted signs.

³ We note that Kerckhoff and Parker also use the word *modest* to mean "small," as in their statement, "In the U.S., race has a massive effect on Sense of Personal Equity, but it has a much more *modest* effect in England" (emphasis added).

² See Przeworski and Teune (1970:91-131) for a discussion of equivalence of meaning when identical questions are used in cross-national research.

Yet, as Table 1 shows, only three of those eight paths are statistically significant, even using a one-tailed test at the .05 level. . . .

First, they have again misstated us. We did not make predictions for the education coefficients under the underdog principle (pp. 128-9) but under the principle of enlightenment (p. 129). Although we did use eight coefficients in evaluating the underdog principle, they were for race, occupation, income and subjective social class in both countries.

Second, Kerckhoff and Parker claim that we simply summed up the signs of the path coefficients and totally ignored the significance of these. They present their conclusion that only three of eight paths predicted under the underdog principle are significant as if this were something that resulted only from their own analysis. In fact, we reported the significance level of these coefficients both in our Table 2 and in the path model presented in our Figure 2. We also explicitly stated which coefficients were significant in the text (p. 139).

Third, Kerckhoff and Parker imply that we are being methodologically lax in using one-tailed tests of significance on these data. Not so, since we clearly predicted direction beforehand using the underdog principle. Thus, a one-tailed test is entirely appropriate.

Fourth, we ask at what point Kerckhoff and Parker would have concluded that the underdog principle is supported by our data. They seem to require that all eight of the predicted coefficients be significant. This is an unreasonable expectation, especially because overlap among different stratification dimensions in a society functions against all of the coefficients being significant. Rather, an appropriate test of the overall support for the underdog principle is the binomial probability of obtaining three or more significant results in eight attempts when the probability of obtaining a significant result is fixed at $p = .05$. In other words, how likely is it that we would obtain as many as three paths which are significant at the .05 level in eight trials. From the binomial probability tables reported in Hays (1973:880), we find that this probability is $p = .0058$, indicating that, overall, the underdog principle is supported ($p < .01$).

Another test of the underdog principle is the F test for the significance of the R^2 statistic obtained when evaluated equality is regressed on the four hypothesized independent variables taken together.⁴ By this test, too, the underdog principle is supported in both countries.⁴

⁴ Kerckhoff and Parker also claim that we overstated the level of support for the enlightenment principle. This claim is made, however, on the basis

SPECIFICATION OF THE PATH MODEL

In their concluding remarks Kerckhoff and Parker make their strongest assertions against our findings and offer a reanalysis of our data. They argue that our analysis, because it includes the variables race and age, is not in a form that is easily interpretable in terms of the "traditional stratification measures (education, occupation and income)." We find this argument lacking on both theoretical and methodological grounds. We have argued elsewhere (Robinson and Kelley, 1979) that there is no theoretical or empirical justification for assuming that the allegedly traditional stratification variables are the only bases of stratification in society. Because some theorists may not have dealt with race and age as stratification variables by no means precludes our doing so. Moreover, there is ample justification for thinking of race and age as differentiating the population into categories of people who are unequal with respect to conditions, opportunities, and treatment and there is empirical evidence to indicate that race and age do not simply reduce to one of the "traditional" stratification dimensions when these are controlled (e.g., Duncan, 1968; Riley et al., 1968-1972). Furthermore, we provided a priori sound theoretical grounds for expecting race (the underdog principle) and age (the historical-shift principle) to have important effects on evaluations of equality. Kerckhoff and Parker offer no theoretical justification for eliminating them from our model except to make the debatable assertion that they are not usually analyzed in such a context.

Kerckhoff and Parker's false dichotomy between the traditional stratification variables and race and age leads them into methodological difficulties that make their concluding remarks dubious. First, they do a reanalysis, consisting of separate regression analyses, in which race and age, on the one hand, are contrasted with education, occupation, and income, on the other, in their effects on the intervening and dependent variables in the two countries (see their Table 2). In conducting these separate analyses they repeatedly contrast the effects of these two sets of variables as though there were no joint effect of these which might influence the uncontrolled path coefficients and R^2 's. Because race and age are correlated with the three "traditional" measures of stratification and because all five of the variables under consideration have effects

of their reanalysis of our data (Table 1) in which three of our variables have been omitted. Their model (and others they present in Table 2) is underspecified and, thus, results in biased coefficients.

on at least one of the intervening or dependent variables, there is no way that one can adequately compare the relative effects of these two sets of variables without including both sets in the model. For example, when they report the proportion of variance explained in evaluated equality by race and age, some of this effect must result from the fact that age and race are correlated with education, occupation and income, which are, in turn, correlated with evaluated equality.

In a second reanalysis, Kerckhoff and Parker report the results of computing the partial correlations between pairs of subjective measures when only the three "traditional stratification variables" are controlled. Although they had earlier concluded that when the five sociodemographic variables in our analysis are controlled, this "more appropriate" analysis supports our findings, they now find that controlling for only three of these variables results in some differences with our results. First, they stress that age and race have an effect on some of our independent variables and especially on our dependent variable in both countries. Second, they say that when these variables are omitted from the model one of the two country differences is not the same as we reported. Of course it is not the same. They have biased the results in both countries by excluding variables that they themselves admit are important determinants of other variables in the model (e.g., Griliches and Mason, 1973; Hanushek and Jackson, 1977; Koutsoyiannis, 1973:245-8).⁵ Additionally, since age and race are differentially influential in England and the U.S., to omit them makes any country comparison spurious.

CONCLUSION

There is little left of the criticisms made by Kerckhoff and Parker. True, our samples are small and inadequate for setting the parameters of intersocietal differences. That is why we refer to our study as "exploratory" and why further investigation should be encouraged—not discouraged—by our preliminary findings. The findings, as Kerckhoff and Parker say, are theoretically interesting.

We are not persuaded by the rest of the Kerckhoff and Parker critique. Much of their analysis, which they consider "more appropriate" than ours, simply supports our findings

and interpretations or produces only slight differences from them. Where they believe they have found some real differences between their results and ours, they have biased their findings by omitting theoretically and empirically important variables. As a result, their models are less specified, less sophisticated, and less genuine than ours.

Thus, we stick by our original conclusion:

Our findings support the generalization that every society, in the face of its particular historical contingencies, provides a rationale, myth or belief, that enables its members to cope with their position in the stratification system. Such a rationale invites people to accept and condone existing inequality as generally just and reasonable. The invitation, however, is not always accepted, as our data show, by young, enlightened or, especially, underprivileged members of society. (p. 141)

Robert V. Robinson
Wendell Bell
Yale University

REFERENCES

- Bell, Wendell
1974 "A conceptual analysis of equality and equity in evolutionary perspective." *American Behavioral Scientist* 18:8-35.
- Bell, Wendell, and Robert V. Robinson
1975 "Description of the basic data: London-New Haven survey 1975." Mimeo. Department of Sociology, Yale University.
- 1973 "An index of evaluated equality: measuring conceptions of social justice in England and the United States." Pp. 235-70 in Richard F. Tomasson (ed.), *Comparative Studies in Sociology: An Annual Compilation of Research*, Vol. 1. Greenwich: JAI Press.
- Duncan, Otis Dudley
1963 "Inheritance of poverty or inheritance of race?" Pp. 85-110 in D. P. Moynihan (ed.), *On Understanding Poverty: Perspectives from the Social Sciences*. New York: Basic Books.
- Griliches, Zvi, and William Mason
1973 "Education, income and ability." Pp. 285-316 in A. S. Goldberger and O. D. Duncan (eds.), *Structural Equation Models in the Social Sciences*. New York: Seminar.
- Hanushek, Eric A., and John E. Jackson
1977 *Statistical Methods for Social Scientists*. New York: Academic Press.
- Hargens, Lowell L.
1976 "A note on standardized coefficients as structural parameters." *Sociological Methods and Research* 5:247-56.
- Hays, William L.
1973 *Statistics for the Social Sciences*. 2nd ed. New York: Holt, Rinehart and Winston.
- Kerckhoff, Alan C.
1974 "Stratification processes and outcomes in England and the U.S." *American Sociological Review* 39:789-801.

⁵ When all variables are included in the model, we found—and duly reported—that both age and race in the U.S., and race in England have significant effects on evaluated equality (p. 135, Table 2).

- 1978 "Marriage and occupational attainment in Great Britain and the United States." *Journal of Marriage and the Family* 40:595-9.
- Koutsoyiannis, A.
1973 *Theory of Economics*. New York: Harper.
- Meier, Dorothy Louise
1962 *Anomia, Life Chances, Perceived Achievement, and Modes of Adaptation*. Ph.D. dissertation, Department of Anthropology and Sociology, University of California, Los Angeles.
- Perkins, H. Wesley
1979 "Alienation, Social Institutions, and Age: A Conceptual and Empirical Study." Ph.D. dissertation, Department of Sociology, Yale University.
- Perkins, H. Wesley, and Wendell Bell
1979 "Alienation and social justice in England and the United States." In Richard F. Tomasson (ed.), *Comparative Studies in Sociology: An Annual Compilation of Research*, Vol. 3. Greenwich: JAI Press. In press.
- Przeworski, A., and H. Teune
1970 *The Logic of Comparative Social Inquiry*. New York: Wiley.
- Riley, Matilda White, and Anne Foner, in association with Mary E. Moore, Beth Hess, and Barbara K. Roth
1968- *Aging and Society*. Vols. 1, 2, and 3. New York: Russell Sage.
- Robinson, Robert V., and Wendell Bell
1978 "Equality, success, and social justice in England and the United States." *American Sociological Review* 43:125-43.
- Robinson, Robert V., and Jonathan Kelley
1979 "Class as conceived by Marx and Dahrendorf: effects on income inequality and politics in the United States and Great Britain." *American Sociological Review* 44:38-58.

there appears to have been a reversal in the relative rate of unemployment for blacks and whites. From 1940, black unemployment exceeds white and climbs rapidly to the current two-to-one ratio. The reversal took place some time during the 1930s. (1976:35)

Despite its engaging character, this conclusion is necessarily suspect because Bonacich has used two different data sets, one for the years prior to 1930 which shows a lower unemployment rate for blacks, and another for the years since 1930 which shows an increased employment rate for blacks. In fact, on examination we find that, taking just the evidence presented by Bonacich, the "reversal" is a function of the switch in data sets and that we do not have any basis for analyzing the reversal in terms of social or economic processes which occurred in the 1930s.

The two data sets used by Bonacich differ both in whether they include males and females and in how they define unemployment. The first set, for the years 1910, 1920, and 1930, reports the percentage of white and black males "not gainfully employed." The second set, for a series of years since 1930, reports the black and white "unemployment rates" for males and females combined (cf. Killingsworth, 1968).

These two sets of data can be used in a time series analysis only if the following two assumptions can be made: first, that social and cultural factors affecting employment operate on females in the same manner in which they operate on males across races; and second, that the index *not gainfully employed* measures the same thing as the index *unemployed*. The first assumption is contradicted by the data presented in Table 1.

If cultural factors were operating uniformly on the black population, that is, across sex categories, we would expect to find both black males and females to have either consistently higher or lower participation rates than do white males and females. We see, for the sam-

ANOTHER LOOK AT THE BLACK/WHITE TREND IN UNEMPLOYMENT RATES

(COMMENT ON BONACICH, ASR FEBRUARY, 1976)*

Edna Bonacich (1976), in her article "Advanced Capitalism and Black/White Relations in the United States," builds an elaborate historical account of why blacks were once *less* unemployed than whites and then lost that advantage. Her argument is based on data which, she claims, show that

* Address all communications to: Kay Oehler; Department of Sociology; Washington University; St. Louis, MO 63130.

I wish to thank Richard E. Ratcliff and Stephen Sheppard for their helpful comments and suggestions.

Table 1. Labor Force Participation Rates for Males and Females, 1960-1975

Year	Percentage in Labor Force					
	Black			White		
	Total	Male	Female	Total	Male	Female
1960	63.0	80.1	47.2	58.8	82.6	36.0
1965	62.1	77.4	48.1	58.5	80.4	37.7
1970	61.1	74.7	48.9	60.2	79.7	42.0
1975	58.8	70.4	48.7	61.1	78.1	45.4

Source: U.S. Bureau of the Census, 1977:387.

Figures are based on 16 years old and older.

Figures include the armed forces.

Black includes black and other nonwhite races.

ple years 1960–1975, that while black males have lower labor force participation rates than their white male counterparts, black females have consistently higher participation rates than white females. These figures indicate that it is misleading to mix employment data based on males only with that based on both males and females in a time series analysis. Any trends that result from such an analysis are likely to be due to differences in the data bases rather than historical developments.

The second assumption creates additional problems. Although the percentage *not gainfully employed* and the percentage *unemployed* might appear to be very similar figures, there are crucial differences in how they are used in census tabulations. As used in the census, not gainfully employed measures the percentage of individuals over a certain age who are not employed,¹ and would include housewives, students, and others who are uninterested in working, along with those who wish to work but are unable to find jobs. The unemployment rate, on the other hand, gives the percentage of the civilian labor force currently seeking but unable to find jobs. The civilian labor force, made up of all individuals who are either employed or currently seeking employment, does not capture housewives, students, or the discouraged who have given up searching for employment.

Table 2 presents the percentage of the population not gainfully employed for the years 1910 to 1970, while Table 3 shows the percentage of the civilian labor force unemployed for the same years. The differences in the ratios of the two tables confirm that two different processes are being measured, and that the data are not comparable. As an example, notice that Table 2 gives the black/white ratio of not gainfully employed for 1950 as .99 and for 1960 as 1.02, a minor increase. Similarly, Table 3 shows the black/white ratio of unemployment for 1950 as 1.73 and for 1960 as 1.85, also only a modest increase.

If, however, we were to create a new table which used data on not gainfully employed for the years 1910 to 1950, and the unemployment figures for the years 1960 and 1970, the black/white ratio for 1950 would be .99 and for 1960 would be 1.85. This change would appear as an alarming increase indeed, and based on these ratios alone we might be led to build an analysis of what cultural and economic changes took place in the 1950s to account for

Table 2. Percentage of Population Not Gainfully Employed, 1910–1970

Year	Black	White	Black/White
1910 ^a	29.0	48.7	.60
1920 ^a	40.1	50.8	.79
1930 ^b	45.4	54.8	.83
1940 ^b	51.6	55.8	.92
1950 ^b	48.9	49.6	.99
1960 ^b	49.1	48.0	1.02
1970 ^b	46.6	44.8	1.04

^a Source: U.S. Bureau of the Census, 1935:288.

Figures based on 10 years old and older.

White includes native-born and foreign-born whites.

^b Source: U.S. Bureau of the Census, 1975:128.

1930 figures based on 10 years old and older. 1940, 1950, and 1960 figures based on 14 years old and older.

Black includes black and other nonwhite races.

1930–1970 figures based on decennial census data.

the growth in the relative unemployment of blacks. But this argument would be an erroneous one because the increase is due only to the data used in constructing the table, not to historical processes which may or may not have occurred in the 1950s. This flaw is exactly the defect in Bonacich's presentation, except that she switched data sets in the 1930s time period instead of the 1950s.

Because of this misapplication of the census data, we are forced to reject Bonacich's conclusion concerning the relative unemployment of blacks and whites. The question which she raises, however, concerning whether blacks were ever less unemployed than whites but somehow lost that advantage, can be pursued with existing census information. Two decisions must be made in advance, however. First, it is necessary to decide whether to use data based on males only or on both males and females. Since it was shown earlier that cultural factors operate differently on males than on females, I believe that a strong argument must be based on figures which include both

Table 3. Percentage of Civilian Labor Force Unemployed

Year	Black	White	Black/White
1930	6.1	6.6	.92
1940	16.8	14.2	1.18
1950	7.8	4.5	1.73
1960	8.7	4.7	1.85
1970	6.8	4.1	1.66

Source: U.S. Bureau of the Census, 1975:128.

1930 figures based on 10 years old and older.

1940–1960 figures based on 14 years old and older.

Black includes black and other nonwhite races.

All figures based on decennial census data.

¹ See, for instance, the discussion on methodology in U.S. Bureau of the Census, *Historical Statistics, Colonial Times to 1970*. The census data actually lists the percentage who are employed, but the percentage not employed is easily obtained from this.

males and females. It is much more powerful to be able to demonstrate that the black population as a whole has a greater difficulty finding employment than the white population, than it is to show that black males have greater difficulty than white males. Demonstrating only the latter leaves open the issue of possible family structure differences between blacks and whites, that is, the possibility that black households rely more heavily on the female as the principal wage earner. The finding that the black population as a whole suffers high rates of unemployment in comparison with the white population is a substantial result which could not be refuted by arguments based on differences in family organization. The data presented here, therefore, are based on figures for both males and females.

Second, it is necessary to decide whether to use percentage of population not gainfully employed or percentage of civilian labor force unemployed. These data sets are presented in Tables 2 and 3, respectively. When the percentage of the population not employed is used, the data do not support the hypothesis that blacks have a greater propensity not to be employed than do whites. For 1950, 1960, and 1970 the black/white ratio appears to stabilize at around 1.0. This means that the percentage of blacks without jobs is very close to being equal to the percentage of whites without jobs.²

However, presented on this basis, the data do not capture what we are really trying to measure. The fact that the same percentage of blacks as whites do not hold jobs tells us little about the processes in the labor market. It is possible, for instance, that 50% of the white population either need or wish to be employed, and that 45% of the white population are able to find jobs. Among the black population, however, 85% may need or wish to hold jobs, perhaps due to lower individual income and the need to increase total family income, but only 45% may be able to find employment. In this case, the black/white ratio based on the percentage gainfully employed will be 1.0, but it will reflect neither the high need for jobs in the black population nor the low rate of success in obtaining employment.

The percentage of the civilian labor force unemployed does a much better job of measuring the differences between the black and white employment patterns with which we are concerned. These figures tell us the percentage of

the labor force (those individuals who are employed or seeking employment) which is unable to find work. The 1960 black/white ratio of 1.85 tells us, for instance, that among blacks and whites in the labor force in 1960, the proportion of blacks unable to find jobs was almost twice the proportion of whites unable to find jobs.³ Since the unemployment rate does not include individuals who have become discouraged and have ceased looking for employment, and since these individuals are thought to be disproportionately black, these ratios, at least for the more recent years, are probably minimum estimates of the black/white differential in unemployment rates.

The ratios of black/white unemployment rates shown in Table 3 support the hypothesis that blacks were once less unemployed than whites, but that a reversal in this pattern took place. It appears that some time in the 1930s the ratio reached 1.0, indicating equal unemployment rates for the two groups. In 1940 the ratio was 1.18, which means that blacks had only a slightly higher unemployment rate than whites. By 1950, however, the ratio had jumped to 1.73, representing a substantial increase in black unemployment relative to white unemployment. It appears, then, that an attempt to explain the relative increase in black unemployment would have to seek historical explanations in the 1940s rather than in the 1930s as Bonacich argues. Quite possibly these explanations would have to take greater account of the dynamic impact of employment patterns during World War II and its aftermath, and of the intensified migration of blacks out of southern agricultural employment.

The data presented here have demonstrated that Bonacich's elaborate historical analysis is based upon an inappropriate use of census data. Her conclusion about the actual timing of shifts in the pattern of black unemployment in relation to white unemployment is due to the switch in data sets which she makes. Even though a corrected view of the unemployment rates for blacks and whites for 1930 to 1970 does reveal that blacks were once less unemployed than whites, but then lost that advantage, the historical implications of this shift need to be interpreted in terms of the time period in which it actually occurred.

Kay Oehler
Washington University

² This is true even when we consider males only, as Bonacich did. The black/white ratios for males only are: 1910: .65; 1920: .86; 1930: .82; 1960: 1.07; 1970: 1.21.

³ These figures are based on decennial census information. When yearly census data are used, the black/white ratios for 1950, 1960 and 1970 are higher. They are 1.84, 2.08, and 1.82, respectively.

REFERENCES

- Bonacich, Edna
 1976 "Advanced capitalism and black/white race relations in the United States: a split labor market interpretation." *American Sociological Review* 41:34-51.
- Killingsworth, Charles C.
 1968 *Jobs and Income for Negroes*. Ann Arbor: University of Michigan Press.
- U.S. Bureau of the Census
 1935 *Negroes in the United States, 1920-32*. Washington, D.C.: U.S. Government Printing Office.
- 1975 *Historical Statistics of the United States, Colonial Times to 1970, Part 1*. Washington, D.C.: U.S. Government Printing Office.
- 1977 *Statistical Abstract of the United States: 1977*. Washington, D.C.: U.S. Government Printing Office.

STILL ANOTHER LOOK AT
 BLACK/WHITE UNEMPLOYMENT:
 REPLY TO OEHLER*

In her comment, Kay Oehler states that I made several errors in my article, "Advanced Capitalism and Black/White Race Relations in the United States." At the outset let me say that the idea that the black/white unemployment ratio shifted in the mid-thirties and rose to a more or less stable level in the 1950s is not original to me. The reader will note that I cited Killingsworth on the point. Killingsworth did not invent his statistics, and indeed Oehler presents some of the same figures in her Table 3. They show a lower black than white unemployment level in 1930, a shift to a higher black than white unemployment rate in 1940, and a rise to a more or less steady relative black disadvantage in 1950, 1960, and 1970. Even Oehler ends up agreeing that this was the basic pattern.

Oehler accuses me of two methodological errors and a substantive one. Let me deal with each of these in turn.

1. Sex Differences

Her first point is that I confuse total unemployment figures with unemployment for males only. She makes a valid point that male and female labor force behavior are distinctive. Her own Table 1 shows a rise in both black and white female labor force participation in recent years, while the figures for males in both groups have fallen. White female rates have

increased more rapidly than black, while black male rates have fallen more precipitously than white. These discrepancies suggest that we should not combine the sexes, but keep them separate in our calculations since, as in this case, the totals may mask important trends. Indeed there are good theoretical reasons for doing so in that females have played a cheap-labor role not dissimilar to blacks, and have been subject to some of the same historical pressures to exclude them.

Table 1 shows unemployment rates for whites and nonwhites from 1948 when they were first collected on an annual basis by the Bureau of Labor Statistics. As can be seen, the two-to-one ratio does appear in the mid-1950s for the total groups, but emerges earlier and more severely for nonwhite males. The lesser differences between the two female groups may reflect pressures on both not to participate in the labor force at all.

Since these figures are somewhat confusing in terms of showing a distinct trend, we need to go back to the census for earlier information. Census labor force data are not completely consistent with those of the Bureau of Labor Statistics (U.S. Bureau of Census, 1975:122), but during the critical period, from 1940 to 1950, they reveal a nonwhite/white unemployment ratio for males of 1.23 in 1940, rising to 1.70 in 1950. The corresponding figures for females are 1.11 in 1.93 (U.S. Bureau of Census, 1953:1-100). In other words, breaking the data down by sex, we still find a rise in relative nonwhite unemployment during this period.

One can see the effects of gender differences in Oehler's Table 2 and footnote 2. She asserts in the text that differences in employment levels are not significant between blacks and whites as shown in Table 2, and that this fact remains true for males only (fn. 2). Yet the data presented in the footnote, indicating a clear rise in black male disadvantage relative to white males, reinforce the idea that we ought to keep the genders separate.

2. Gainful Employment

Oehler makes a second methodological criticism: that I combine "not gainfully employed" statistics with unemployment statistics in a single data set. She proceeds by drawing a distinction between these two types of data. I have two answers to this charge. First of all, I was fully aware of this problem. As I state in my paper (Bonacich, 1976:34):

Unemployment statistics as currently defined were not collected prior to 1940; however, earlier censuses computed the proportion of the population which was gainfully employed. The comple-

* Address all communications to: Edna Bonacich; Department of Sociology; University of California; Riverside, CA 92521.

Table 1. Nonwhite to White Unemployment Ratios, 1948-1974

Year	Total	Male	Female	Year	Total	Male	Female
1948	1.69	1.71	1.71	1962	2.22	2.37	2.00
1949	1.59	1.71	1.39	1963	2.16	2.23	1.93
1950	1.84	2.00	1.58	1964	2.09	2.17	1.93
1951	1.71	1.88	1.45	1965	1.98	2.06	1.84
1952	1.93	2.08	1.73	1966	2.21	2.25	2.00
1953	1.67	1.92	1.32	1967	2.18	2.22	1.98
1954	1.98	2.15	1.66	1968	2.09	2.15	1.93
1955	2.23	2.38	1.95	1969	2.06	2.12	1.86
1956	2.31	2.32	2.12	1970	1.82	1.82	1.72
1957	2.08	2.31	1.70	1971	1.83	1.86	1.71
1958	2.07	2.26	1.74	1972	2.00	1.98	1.92
1959	2.23	2.50	1.77	1973	2.07	2.05	1.98
1960	2.08	2.23	1.77	1974	1.98	2.12	1.75
1961	2.07	2.25	1.82				

Source: U.S. Bureau of Labor Statistics, 1975:146.

ment of this figure gives us not only the proportion unemployed (defined as persons in the labor force who are out of work) but also those who have not entered the labor force. As a measure of unemployment, it has the advantage of not omitting hidden unemployment, and disadvantage of including those who would genuinely not be part of the labor force (such as students and the independently wealthy).

I used these data, not to mislead anyone, but to check the assertion by Killingsworth by trying to look at pre-1930 trends. On doing so I found a morass of confusion regarding measures of unemployment. I presented the figures on non-gainful employment from 1910 to 1930 mainly to show that more black males were working than whites, and that this was not just an artifact of differences in regional concentration between blacks and whites, which may have been subject to different economic conditions.

Second, Oehler assumes that I concluded that a shift in the ratios occurred during the 1930s because I combined the gainful employment data for 1910 to 1930 with unemployment data from 1940 on. Here she is quite mistaken. I based this conclusion on the findings of Killingsworth which include 1930 and specifically assert that a shift occurred in that decade. I never intended that the two data sets should be combined, nor is there a table which combines them.

Oehler's Table 2, in contrast, is guilty of some of the very things she charges me with. Here she combines two different data sets in one table. There are two problems with the table. First, the years 1910 and 1920 measure blacks only under "Black," while the years 1930 to 1970 include all nonwhites. Second, and more important, she uses the concept *gainful employment* as measured by the 1910 and 1920 censuses, but uses *employment* (or more precisely its reciprocal, i.e., unemployment

plus nonparticipation in the labor force) for the later decades. As stated in *Historical Statistics* (U.S. Bureau of Census, 1975:124):

The gainful worker concept differs radically from current labor force concepts. . . . The primary purpose of the gainful worker statistics was a count of occupations. The data were based on a question relating to occupational status and not to employment status as currently defined. . . . The question as posed by the enumerator made no reference to time. The response thus varied substantially with the individual. Many persons who were retired or permanently disabled and who had not worked for some time reported their former line of work and were counted as gainful workers. On the other hand, many employed persons did not enter themselves as gainful workers, because they considered themselves as students or housewives and their current employment as only temporary.

Thus, Oehler combines two noncomparable data sets in one table in order to speak of trends.

3. Timing of Shifts

As to the substantive charge, in her penultimate paragraph, Oehler recognizes that there was indeed a shift from blacks being more employed than whites, and that the ratio reached 1.0 during the thirties. She also points out that the largest jump in the ratio emerged in 1950, and concludes: "It appears, then, that an attempt to explain the relative increase in black unemployment would have to seek historical explanations in the 1940s rather than in the 1930s as Bonacich argues."

To this I can only respond that Oehler misread my article. I pointed out that the New Deal led to certain short-term effects, which equalized the price of labor, and enhanced black and white worker solidarity, but that, *in the long run*, capital was able to counter this by

internal relocation, automation, and relocation overseas. As I stated:

Black labor has been by-passed for machines and other cheap labor groups, here and abroad, creating a class of hard-core unemployed in the ghettos. This reality took a while to emerge after the New Deal and only became full-blown in the mid-1950s when black unemployment reached its current two-to-one ratio. (Bonacich, 1976:45)

Her misreading seems to arise from a confusion between two kinds of shifts. First, there was the shift from a white lead in unemployment to a black lead, in the 1930s, when the ratio passed 1.0. The second shift is the emergence of the 2.0 black to white ratio in the 1950s. She seems to think that I am only talking about the first when, in reality, the paper attempts to explain the entire sequence.

In conclusion, since Oehler essentially agrees that there was a shift in unemployment ratios, and that the timing corresponds to Killingsworth's (and my) description of it, her assertion that I build an "elaborate historical

analysis . . . based upon inappropriate use of census data" is unfounded.

Edna Bonacich
University of California, Riverside

REFERENCES

- Bonacich, Edna
1976 "Advanced capitalism and black/white race relations in the United States: a split labor market interpretation." *American Sociological Review* 41:34-51.
- U.S. Bureau of Census
1953 *Census of Population, 1950. Vol. 2, Pt. 1.* Washington, D.C.: U.S. Government Printing Office.
1975 *Historical Statistics of the United States, Colonial Times to 1970. Pt. 1.* Washington, D.C.: U.S. Government Printing Office.
- U.S. Bureau of Labor Statistics
1975 *Handbook of Labor Statistics, 1975. Reference ed.* Washington, D.C.: U.S. Government Printing Office.

ITEMS (Continued)

■ WENDY C. WOLF (Sex and Authority in the Workplace) is Assistant Professor in the Department of Sociology at the University of Arizona. Her research interests focus on sexual stratification by studying the effects of schooling choices on sex segregation in jobs. NEIL D. FLIGSTEIN is Assistant Professor of Sociology at the University of Arizona. He is doing research on migration of blacks and whites from counties in the South, 1900-1950.

■ WILLIAM L. YANCEY (The Antecedents of Community) is Professor of Sociology at Temple University. EUGENE P. ERICKSEN is Associate Professor of Sociology and Sampling Statistician, Institute for Survey Research, Temple University. Yancey and Ericksen are currently involved in a historical and contemporary study of ecological, socioeconomic and cultural factors influencing the formation and maintenance of communities and ethnic groups in Philadelphia.

■ TOBY L. PARCEL (Race, Regional Labor Markets and Earnings) is Assistant Professor of Sociology at the University of Iowa. She is investigating regional, industrial and occupational labor market effects upon earnings of blacks, women and youth.

■ STEVEN L. GORTMAKER (Poverty and Infant Mortality in the United States) is Assistant Professor in the Department of Behavioral Sciences, School of Public Health, Harvard University. His research is focused on the relationships between stratification and health, and the application of structural equation models to complex disease processes.

■ KENNETH H. ANDREWS (Attitude and Behavior) is Research Associate in the School of Public Health, Columbia University. He is working on structural equation models of parental and peer influences on adolescent drug use. DENISE B. KAN-

DEL is Adjunct Associate Professor in the Department of Psychiatry and School of Public Health. She is completing a longitudinal study of adolescent use of legal and illegal drugs and planning a follow-up in early adulthood. She is editor of a newly published volume, *Longitudinal Research on Drug Use: Empirical Findings and Methodological Issues* (Hemisphere-John Wiley, 1978).

■ PAUL ATTEWELL (Government Policy and Local Practice) is a Postdoctoral Fellow at the Institute for Social Change, University of California, Berkeley. His current research interest is the application of organizations theory to the implementation of government policy in the area of social problems. DEAN R. GERSTEIN is Senior Research Associate, Committee on Substance Abuse and Habitual Behavior, National Academy of Sciences. He is studying general action theory, its extension and application to problems of disorder, socialization, and political process.

■ ALAN C. KERCKHOFF (Comment on Robinson and Bell, ASR April, 1978) is Professor of Sociology at Duke University. He is completing a project on "Sex Differences in Early Contingencies in Attainment," which focuses especially on the effects of early marriage and parenthood. His most recent publication is *Ambition and Attainment* (Rose Monograph, 1974). ROBERT NASH PARKER is a Ph.D. Candidate in the Department of Sociology at Duke University. He is doing comparative research on Cuban and Mexican immigrants to the United States.

■ KAY OEHLER (Comment on Bonacich, ASR February, 1976) is a Ph.D. Candidate in Sociology at Washington University, St. Louis. She is conducting research in urban sociology.

New from Martinus Nijhoff Publishing

SOCIOCYBERNETICS

Volumes I and II

R. F. Geyer and J. van der Zouwen,
editors

A selection of papers discussing the relevance of cybernetics and systems to a wide spectrum of social problems.

Volume I, 1978, paper, 160 pp., \$14.95

Volume II, 1978, paper, 160 pp., \$14.95

TEACHING MEDICAL SOCIOLOGY

Retrospection and Prospection

Yvo Nuyens and
Janin Vansteenkiste, editors

A selection of papers presented at the International Seminar on Training Programs in Medical Sociology which explore the questions of *how* to teach medical sociology, as well as *what* to teach.

1978, paper, 266 pp., \$19.50

ETHNIC MINORITIES IN URBAN AREAS

*A Case Study of Racially
Changing Communities*
David Varady

One of the first empirical studies of individual household residential decision-making in an ethnically changing community.

1979, cloth, 202 pp., \$17.95

*To order, or to request a free catalog,
please write to:*

Martinus Nijhoff Publishing
Suite 36B
160 Old Derby St.
Hingham, MA 02043

In Europe, write to:

Kluwer Academic
Publishers Group
Distribution Center
P.O. Box 322
3300 AH Dordrecht,
The Netherlands



+ + +

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Robin M. Williams, Jr., Department of Sociology, Cornell University, Ithaca, New York 14853.

AMERICAN SOCIOLOGICAL REVIEW

MAKING IT IN AMERICA: DIFFERENCES BETWEEN EMINENT BLACKS AND WHITE ETHNIC GROUPS*

STANLEY LIEBERSON AND DONNA K. CARTER

University of Arizona

American Sociological Review 1979, Vol. 44 (June):347-366

Blacks and five white groups are compared in terms of their rates of inclusion in *Who's Who* between 1924 and 1974. Of the groups considered, only the English exceed the national average through the end of World War II, although the other groups began to move up during this period. Jews have moved sharply ahead of the English since then, Scandinavians are now close to the English, and Italians and Slavs have increased sharply. The black rate is lowest of all, and did not move up until after World War II. There is evidence of increased assimilation between the white groups, with their sources of eminence becoming increasingly similar. However, there were and are sharp differences between blacks and whites in the pathways to national eminence. A detailed examination of the sources of each group's national prominence provides powerful clues to the differences between the forces affecting blacks and the new immigrants from South-Central-Eastern Europe, as well as between the newer and older white groups in the country. Although some immigrants with worldwide reputations were admitted, the role of immigration in generating nationally prominent Americans is misunderstood. Black sources of national eminence have shifted radically since World War II from the patterns found in 1924 or 1944.

The hardships encountered by blacks and the "new" Europeans who arrived in sizable numbers after 1880 from South, Central, and Eastern Europe, are well-known and widely documented. In this paper we are concerned, however, with the small numbers from each group who were exceptionally successful, who by some criteria might be said to have "made it" in a realm admired by Americans generally. This is a study of the representation in *Who's Who in America* of six groups: blacks; three new European groups—Italians, Slavs, and Jews; and two old European categories—the English and Scandinavians.¹ It uses three different directories (Marquis, 1924; 1944; 1974) to

cover the 50-year span between 1924 and 1974.

A study of the highly prominent members of each group asks questions not only about these people themselves but about the nature of the group's position. To be sure, prominence is not a trivial matter in itself because some of these people possess great wealth, or are in powerful political positions, or occupy central intellectual roles, or become popular models who affect others in their own group and serve as well as symbols of the group for outsiders. Positions of prominence can influence later developments for the group. Beyond this, however, differences in rates of ethnic prominence, the channels through which success is achieved, and their changes during the past half century tell us much about the entire group and the forces impinging upon it.

This is not the first study of racial or ethnic rates in *Who's Who*; witness the important work of Bardolph (1957a; 1957b) on blacks between 1936 and 1955

* Address all communications to: Stanley Lieberman; Department of Sociology; University of Arizona; Tucson, AZ 85721.

¹ The Slavic and Scandinavian categories are broader than one would ideally prefer since they cover populations in the United States normally considered separately, for example, Poles, Finns, Swedes, etc.

or the somewhat encyclopædic approach of Weyl (1966) to white rates of eminence. Moreover, there is the early effort of Woods (1914) to show that the new Europeans were inferior to the older American white stocks because at that time the former had far lower rates of national eminence. Nevertheless, to our knowledge, this is the first study which rigorously compares blacks and these white groups in terms of the career lines which have led to national eminence and provides a systematic measurement of the group rates of eminence over time, recognizing the changing population composition of the nation. It is our belief that a study of the prominent within each group, as arbitrary as such a definition may be with the use of these directories, can throw a distinctive and important light on race and ethnic relations in this country, present and past.

DATA AND METHODS

The basic data sources are the 1924-25, 1944-45, and 1974-75 editions of *Who's Who in America*, a standard reference work which attempts to list eminent living Americans. There are serious limitations and difficulties in using these volumes: the criteria for inclusion may not be consistent over time (as will be shown, there is evidence that they are not); ethnic or racial membership could affect the possibility of inclusion; determination of eminence within a given occupational or professional category can be arbitrary such that there is no purely objective basis for a decision. Also, it is difficult to equilibrate the various forms and ways of achieving eminence or distinction in different domains, for example, holding national office in the League of Women Voters vs. ownership of a large scrap processing operation vs. managing a minor league baseball team vs. being a crime boss, etc. All of this means that the listings obtained from *Who's Who* are of less than precise validity; on the other hand there is probably no better source for a systematic comparison of the different groups in terms of the upper end of various career paths. As Baltzell (1966:271) observes after summarizing the direc-

tory's inadequacies, it "is a nationally recognized listing of brief biographies of the leading men and women in contemporary American life. As such, it is a perfectly democratic index of high functional class position and has wide prestige." The reader should keep in mind that such terms as *prominent* and *eminent* will refer to persons listed in these directories.

It is impossible to determine ethnic origin and race by contacting each person listed in *Who's Who* because most of those listed in the earlier two volumes are no longer alive. Moreover, even for the most recent period, it would take an extremely large sample to obtain a minimally adequate number for some of the groups. A rather simple and reasonably effective procedure was adopted for the white groups. Weyl (1966:219-21) lists a set of surnames corresponding to various ethnic groups along with the number of each surname appearing on Social Security lists in mid-1956. Among Italians, for example, surnames beginning with the following are included: Caruso, Costa, Esposi, Ferrar, Marino, Romano, and Rossi.² Whenever possible, persons with these surnames listed in *Who's Who* were used to generate about 100 or so representatives of each white group for a given period. The number of necessary surnames varied over time for some groups, but this was taken into account when rates of change were computed. In other cases, the available list of leading surnames and/or the number listed in *Who's Who* was so small that it was necessary to supplement the listing with additional ethnic names from the directory of surnames edited by Smith (1973), a volume which gives the ethnic group associated with each surname. Even then, it was not always possible to reach the goal of 100 per group for each period. These additions were not included in the calculation of the prevalence rates shown in Table 1.

Obviously the surname technique has its problems, with errors of both exclusion and inclusion. To some unknown degree there are persons who are not members of

² All names that start with the specified letters are included, for example, *Costantini*, *Costanzo*, *Costanza*, as well as *Costa* alone.

Table 1. Listings in *Who's Who* per 10,000 Population

Group	Year		
	1924-25	1944-45	1974-75
Total Population	2.27	2.48	3.42
Black	.06	.07	.37
English	3.74	3.74	3.88
Italian	.09	.33	1.31
Jewish	1.59	1.97	8.39
Scandinavian	.42	1.29	3.57
Slavic	.16	.29	1.48

the ethnic group attributed to them on the basis of surname. On the other hand there are those who belong to these ethnic groups but have surnames that would not identify them as such. It is likely that the latter are subject to less discrimination and prejudice than might otherwise be faced. In more recent times, intermarriages between the groups make attribution of ethnic origin even more complex. However, one can reasonably assume that the sample in each period does approximate the patterns and behavior of eminently successful members of each ethnic group.

Surnames clearly do not form an adequate basis for determining black representation in *Who's Who*. Fortunately, blacks included in *Who's Who* were listed in Work (1925) and Guzman (1947) for both the 1924-25 and the 1944-45 periods, respectively—indeed, the 1924 and 1944 periods were selected in order to take advantage of these lists. It is not entirely clear to us how these lists were developed and hence one cannot fully guard against the possibility here too of errors of both inclusion and exclusion. No list could be found for the most recent period and it was necessary to use a different procedure because black representation in *Who's Who* since World War II is clearly of great interest. Assuming that virtually all blacks listed in the 1974-75 *Who's Who in America* are also found in their own ethnic volume, all of the listings in *Who's Who Among Black Americans, 1975-76*, edited by Matney (1976), starting with the letter A were checked against *Who's Who in America* until some 125 blacks were thus obtained. There could be errors of omission here since those not listed in Matney (1976) will have no chance of being

counted as a black listed in *Who's Who in America*, but that would be analogous to those lost through nonethnic surnames in the case of the white groups. The adequacy of such a technique can be tested for an earlier period, 1944-45, by determining how many blacks listed in *Who's Who in America* (according to Guzman, 1947) would have been included in a directory of eminent blacks published about that time (Fleming and Burckel, 1950). Only two of 72 blacks listed in *Who's Who in America* and still alive several years later were not found in the black directory. Hence, for an earlier period at least, the procedure used in 1974 worked very well. The Appendix provides a more detailed statement of the procedures used for both blacks and the white groups as well as their limitations.

The coding of occupational categories is somewhat arbitrary and approximate. This is unavoidable because some respondents have several positions at the same time or are vague about their current occupation, as opposed to earlier positions. As far as possible, we classified respondents in terms of their current dominant position. The unavoidable overlaps between some of the categories were resolved through several arbitrary rules of thumb. Except for physicians, all others employed as professors in a university or college were so classified rather than as, for example, chemists, historians, lawyers, etc. Physicians were classified as such even if they were professors of medicine or otherwise employed, whereas lawyers were classified by their most recent activity.

ETHNIC AND RACIAL INCLUSION IN *WHO'S WHO*

The proportion of Americans included in *Who's Who* has increased through the years. The first volume, for 1899-1900, listed only 1.15 persons per 10,000; and 2 and 3 per 10,000 were first reached in 1912-13 and 1954-55 respectively (figures reported in Larson, 1958:6). In 1924-25, the beginning of the 50-year span under consideration here, when the rate for all Americans was 2.27, of the groups considered here only the English reached that

level—and they exceeded it by a sizable margin. Although the rate for Jews was less than half of the English, they stood out from the remaining groups, with Scandinavians, Slavs, Italians, and blacks following in that order (see Table 1). This was for the year when relatively unrestricted migration to the United States was first stopped, but even then blacks were still below the new European groups considered here.

Twenty years later, toward the end of World War II, none of the three new European groups had reached the national average, although Jews were getting closer and the other two had handsome rates of increase based on very small initial levels. Scandinavians were coming along strongly, although their rate in 1944 was still half of the national average. The English were well ahead of the groups specified here as well as the national average. Blacks were still essentially unchanged from their level 20 years ago.

By 1974–75 there were some extraordinary changes. Americans of English origin had gained somewhat over their level in 1944, but it was not enough to make up for the much higher rate of inclusion in *Who's Who*, so that their rate, 3.88, was only slightly above the national average of 3.42. Jews gained at an incredible pace after World War II, with a *Who's Who* rate in 1974 of 8.39, about 2.5 times greater than the national average. Scandinavians were now also enjoying a rate slightly in excess of the national average (given the crude nature of the figures, it would be safest to say that they were about at the national level). Both the Slavs and Italians were still well below the national level, but had clearly moved ahead during the 30 years, increasing in the magnitude of four and five times, respectively, over their 1944 levels. The black rate had also quintupled during this span, reaching .37, which was still about one-tenth of the national average. Starting with such a low base in 1924 and having barely made any progress through World War II in reaching national eminence, this sharp postwar jump still left them far behind.

One should keep in mind certain technical factors in appraising these different rates. Larger groups are less likely to de-

viate greatly from the national average simply because of the "part-whole effect." This is particularly important for the English who are an important segment of the national population. Further, one should bear in mind that a variety of ethnic groups whose behavior has a substantial bearing on the national averages are not included in this analysis; particularly important are other groups from the British Isles—the Scottish, Welsh, and the Irish—and Germans as well as many other groups. Moreover, continuing processes of intermarriage, name changing, and the like are affecting the meaning of each surname rate over time.

Nevertheless, the figures in Table 1 show how truly dramatic were the changes in the position of various white ethnic groups in the post-World War II period. It is not clear whether the recent rapid rates of change are a continuation of shifts that had begun to occur in the period between the two world wars rather than being uniquely stimulated by events surrounding the end of the second war. This is an important issue that, in itself, merits separate consideration elsewhere. The eminence pattern for blacks is striking because (1) it was initially somewhat lower than the new European groups; (2) there was no sign of any true increase between 1924 and 1944, a period when the absolute gains were modest for Italians and Slavs, but were nevertheless relatively sizable compared with their small initial levels; and (3) there are now signs of change for blacks. Their rates are presently in excess of the levels reached by Italians and Slavs 30 years ago, albeit well below the rates observed for Scandinavians and Jews 50 years ago. Their increase is probably not due to a special effort to include blacks. Among 25 black colleges sampled, the presidents of 11 were included in *Who's Who* in 1974 compared with nine in 1944—a minor temporal difference.

OCCUPATIONS

The groups vary not only in their rates of eminence but also in the occupational routes through which such a distinction is achieved. In comparing these pathways to prominence, bear in mind that the chance

of making it into *Who's Who* varies by occupation and hence the directory distribution does not reflect the frequency with which such occupations are pursued by members of an ethnic group. In addition, the chance of making it in *Who's Who* for persons holding a given occupation probably varies between ethnic groups. As a consequence, no inferences can be made about the underlying occupational distribution of the population based on the eminent members of the group reported in *Who's Who*.

Differences among groups in the occupational patterns of their eminent members can be summarized with the index of dissimilarity. The index ranges from zero (if the groups being compared have identical occupational distributions) to 100 (if the occupational distributions are so different for the two groups that no occupation is held by both). Unfortunately, the number of cases is rather small, particularly for some of the groups in the earlier years, and the number of occupational categories is relatively large. The indexes are computed on the basis of all of the occupational categories—not just those listed separately later in Table 4. These factors tend to introduce a serious sampling problem in the measure and hence small differences between indexes cannot be taken seriously (see Cortese et al., 1976). Bear in mind, too, that the index of dissimilarity does not rank order the occupations and hence differences in degree between occupations are not taken into account (see Lieberman, 1975).

Initially, the differences between blacks and the various white groups were not that much greater than the indexes found between the white groups. The indexes were relatively high in 1924–25 but in a rather narrow range, with the average index of dissimilarity ranging on the low side from 46 and 48, respectively, for Scandinavian and English comparisons with other groups. Blacks were towards the high end of the range, 62, but were only slightly more than the average for Slavs, 61, and actually slightly less than Italians, 64 (see Table 2). Jews occupied an intermediate position, with an average index of 52 against each of the other groups. With one major exception, the groups have become

Table 2. Indexes of Dissimilarity

Group (and Comparison)	Year		
	1924–25	1944–45	1974–75
Black			
vs. white groups	62	48	54
English			
vs. all groups	48	39	30
vs. white groups	47	36	25
Italian			
vs. all groups	64	42	34
vs. white groups	61	40	31
Jewish			
vs. all groups	52	38	31
vs. white groups	52	35	24
Scandinavian			
vs. all groups	46	37	28
vs. white groups	46	36	22
Slavic			
vs. all groups	61	35	29
vs. white groups	58	31	22

more alike over time in the occupational distribution of their eminent members. Observe in Table 2 how the average index between white groups progressively declined such that by 1974–75 they ranged between 22 and 31. Blacks, on the other hand, had an average index of 54 from these white groups. The decline in black-white differences during the first 20 years was not as sizable and, moreover, in the recent period there was an actual increase. Whereas the occupations of white ethnic group members making it in *Who's Who* have become more alike, the distribution for blacks remained far more distinctive.

These changes reflect some surprising processes. In the earliest period, blacks exceeded all other groups in the extent to which they were concentrated into a small number of occupations (see the Gini concentration ratios in Table 3) such that 70% of all blacks in *Who's Who* were either

Table 3. Gini Concentration Ratios

Group	Year		
	1924–25	1944–45	1974–75
Black	.8434	.8173	.6682
English	.6541	.6767	.7889
Italian	.7799	.6985	.7430
Jewish	.6525	.7034	.8289
Scandinavian	.5520	.6767	.7947
Slavic	.8130	.6487	.8089

Based on cumulative proportions of occupational categories vs. persons in each category—with the latter arrayed from high to low.

religious figures (47.5%) or college professors and administrators (22.5%). By contrast, the largest two occupations for Jews held only about 30% of that group's listings in *Who's Who* (lawyers and physicians, 17 and 14%, respectively). The figures were also much lower for the largest two occupations among Scandinavians, 32% (college professors and administrators, and religious leaders); English, 40% (college professors and journalists); Italians, 40% (singers and musicians, and bankers or authors).³ Only the Slavs were close to the black concentration ratio, .81, with 62% in their largest two categories: college professors, and singers or musicians.

The situation was rather different by 1974-75, with the white groups now far more concentrated than they had been, and blacks having the lowest Gini index of any of the groups. This combination of greater white concentration coupled with increased similarity in the locus of their concentration is what generated the lower indexes of dissimilarity described above. For example, the single largest source of eminence for all of the groups, blacks included, is college professors and administrators. But there is wide variation among the groups in the degree of concentration; 19% of eminent blacks were in this category whereas 26% of Italians, about a third of English and Scandinavians (34 and 38%, respectively), and about 45% of Slavs and Jews were so concentrated.

These figures indicate that the various white groups are assimilating or merging as far as the ways in which they make it to *Who's Who*, but thus far blacks are left out. In earlier periods the white groups as well as blacks had distinctive occupational routes to prominence. The black-white ethnic group differences are now far greater than the differences among the white groups. The black group is now more distinctive than ever in the routes by which they enter *Who's Who*.

SPECIFIC BLACK OCCUPATIONS

The specific occupations of blacks and whites listed in *Who's Who* provide a

powerful clue to the broader societal forces differentially affecting these groups. Particularly revealing are both the positions through which members of the six groups attained such a distinction in 1924 as well as the changes that have occurred since then in their pathways to distinction. Because of the small numbers involved, concern with issues of sample size and reliability must be relaxed more than we would prefer, but in our estimation the occupational patterns among these small subpopulations shed light on certain facets of race and ethnic relations in this nation that would otherwise not be possible. This section focuses on black occupations, with a secondary concern given to comparisons with the white ethnic groups. The opposite emphasis is taken in the succeeding section.

1924-25. Nearly half of the 80 blacks found in *Who's Who* in 1924-25 were there because of their position in organized religion. Of the 38 included, 19 were either bishops of the African Methodist Episcopal Church or otherwise affiliated with the largest exclusively black church body in the nation, and ten were bishops of the Methodist Episcopal Church, with smaller numbers of Baptists and others represented (including two bishops of unspecified churches). By contrast, there were no Italian or Slavic religious leaders found in the very small samples of those groups in this period and religious leaders made up relatively small percentages of the English, Scandinavian, and Jewish groups' 1924 representation (respectively, 5, 9, and 11%). Although blacks had this exceptional concentration in the religious path to *Who's Who*, their concentration as college professors and administrators, 23%, is not unusually low when compared with the English (25%) and Scandinavians (23%), and is considerably greater than for Jews and Italians (12 and 8%, respectively). It is only among Slavs that we find a much larger component making it through a college or university affiliation, 38%.

Both of the major sources of black eminence 50 years ago were segregated institutions in which whites did not compete, but in which at least some minimal recognition on the national plane could be obtained. These two categories, colleges

³ All the specific occupational categories used are listed in Table 4.

and religion, incorporated 70% of all blacks in *Who's Who*. There was a massive difference between blacks and the new Europeans at the very start of this period. The ten Slavic college professors and administrators were almost without exception affiliated with major, nationally prominent institutions: Chicago, Harvard, Illinois, Iowa State, Michigan, Minnesota, Northwestern, Wisconsin, and Yale (2). By contrast, every black in this category was affiliated with a black institution, located outside the national mainstream of the white-dominated society.

The next largest category for blacks in 1924–25 was authors, of which there were seven (roughly 9% of all blacks in *Who's Who*). Judging by title, and reputation in some cases, there is evidence that most of these authors were writing about blacks, but probably at least some were reaching a broader audience in the nation rather than a segregated one. All seven were found in the Burke and Howe (1943) reference on American authors. It is, of course, quite common for authors to write about their own experiences and, in this case, writing about the black experience meant an opportunity to develop a larger audience and make it outside the segregated market existing for many other blacks. Doubtlessly, the remainder of blacks in *Who's Who* in 1924 includes some who also served a segregated population.

1944–45. Several major changes occurred for both blacks and whites during these 20 years. Religion was no longer a major means for entrance into *Who's Who* for blacks, with only 8% of those listed now in this category. Although one may speculate that this change reflects an increasing secularization (Bardolph, 1957a:185), we believe that two other factors also account for this shift. Notwithstanding claims to the contrary (Marquis, 1944:xi), by 1944 A.M.E. bishops were de-emphasized as a source of listings. Second, the merger in 1939 of several Methodist organizations led to most blacks being placed into one jurisdiction (see Guzman, 1947:124). Therefore, although a sizable proportion of these officials were included in the 1944–45 *Who's Who*, the absolute number was no longer as great as it had been.

Taking up the slack was the academic

world; its proportion of eminent blacks more than doubled during this period, an enormous jump which was not shared by the other groups. In 1944–45, four of the white groups ranged from 20 to 21% in the fraction of its eminent people associated with colleges and universities, with the Scandinavians reaching 32%. By contrast, 52% of all listed blacks were in this category. Many of these black academics boasted excellent institutional credentials. The highest degree for nine of the 44 was from Columbia, eight were from Harvard, seven were from Chicago, and there were several other nationally prominent institutions represented in smaller numbers. Again, as far as we could tell, virtually all of the blacks were affiliated with predominantly black institutions. By contrast, the 16 academics of Italian origin included three appointments at Harvard, and one each at Cornell, U.C.L.A., Columbia, California, and Chicago. Although the institutional affiliations were not as uniformly impressive as the Slavs listed in 1924, clearly we can see a great difference from the black experience.

A new category, singers and musicians, became important by 1944. Whereas this had been the source of two prominent blacks in the first period, there were now eight in this class (9.5% of the eminent blacks in 1944–45). For the most part, these blacks were in the classical tradition; in addition to contralto Marian Anderson and singer-actor Paul Robeson, there were several other concert singers and composers of classical music. W. C. Handy, composer of a number of important blues and a band leader, to our knowledge was the only exception. No English or Scandinavians in our sample made it into *Who's Who* through music (obviously this would not have been the case if the entire population had been covered); and 5% of Jews made it through this route, but music in 1944 was an even more important route for Slavs and Italians (15 and 16%, respectively) than it had been for blacks. A more thorough comparison is made later in the paper.

The author category was again important for blacks, amounting to 8% of all their listings, far greater than the figure for any other group. Again, the list included a number who were writing about black ex-

periences, but for a larger audience than simply blacks, for example, Langston Hughes (see Bardolph, 1957b:268). Both music and writing provided paths to prominence which were not based exclusively on a black audience or requiring approval exclusively from blacks. Both activities are relatively less "institutionalized" or rigidly structured in their career lines than are many others, for example, reaching the top in a large corporation. Hence, there may have been relatively less difficulty in these domains than in other more formal systems. No other category captured as much as 5% of the black listings, other than the four journalists who barely made the cut-off. There were only two black doctors and one lawyer in the 1944-45 listings. In 1924-25, there were no black businessmen or bankers listed and this was the case again except for one black banker.

1974-75. The post-World War II period has witnessed some significant changes in black occupational roles among those in *Who's Who*. As noted earlier, colleges and universities were the most important passageway into eminence for all of the groups, but it became relatively less so for blacks. In thirty years since the end of World War II a massive shift sent the black figure plummeting from an exceptionally high 52% in 1944 to an exceptionally low 19%. This change in itself was sufficient to mean a massive redistribution. Of those in this category, however, about a third are affiliated with institutions that are not predominantly black. So, although relatively less important to blacks than it had been as an entry into *Who's Who*, academia now functions for the first time on the national stage rather than as a segregated institution. Of course, the integration of academic institutions and the opening of other opportunities are not uncorrelated but probably reflect the greater "muscle," awareness, and governmental pressures experienced in recent years. Bear in mind that the number of eminent black academics actually increased at a faster rate than the total black population, but its growth was not as great as that experienced by other sources of eminence (see the discussion of Jews in government below).

Sports and entertainment are both major sources of national distinction for blacks in a way that is unmatched for any other group. The singer-musician and athlete categories are the second and third most important sources of blacks in *Who's Who* in 1974-75, 15 and 14%, respectively. These rates, to use a show business term, are colossal when compared with the white groups. Singers and musicians are 3% or less of the white listings, except for Italians, and athletes are not more than 4%. Bear in mind these figures do not mean that more musicians or athletes are black than white, rather it means that these areas are far more important sources of eminence among blacks than among any of the white groups under consideration. Entertainment, moreover, is a major way of achieving such prominence within a national community rather than on a segregated basis. As we have seen, much of the earlier routes of eminence for blacks meant competing with other blacks and rising to the top within the black community, but with whites absent as either competitors or members of the "audience" of peers. This, of course, was not by black choice but by restriction. Sports and entertainment are therefore striking because they have become major avenues, to a degree unrivaled, for achieving national prominence with adulation from both whites and blacks in competition with both whites and blacks.

The procedures used in this study may specially underestimate the role of singers, musicians, actors, and other popular entertainers among the various white ethnic groups. This is because there is a tendency for such persons to change surnames, particularly in the direction of anglicizing them. There may have been less of such a tendency in the more "cultural" forms of entertainment such as, for example, the conducting, playing, and singing of classical music. Keeping this problem in mind, the singer-musician pattern for the white groups seems to be moving in the opposite direction from blacks. Such pursuits were not important sources of eminence for the English or Scandinavian groups despite the surname bias in favor of the former. No whites of English origin were included in the samples for

any of the three periods; and the 5% for Scandinavians in 1924-25 (based on three classic artists, two singers with the Metropolitan Opera, and a violinist-conductor-instructor), declined after that. For Jews, it has been a relatively unimportant source as well, ranging from 3 to 5%. Again bear in mind the problem of surname changes in the direction away from South-Central-Eastern European identity, particularly where popular forms of entertainment are concerned. Music had been an extremely important factor for both the Italian and Slavic groups earlier in the century and we will later consider some of the differences between these groups and blacks.

It is impossible to say if an analogous process occurred in athletics such that its role as a source of fame among blacks increased at the same time as it declined among some of the white ethnic groups. This is because neither the 1924 nor the 1944 editions of *Who's Who* included any athletes in the group samples. Further examination indicates that *Who's Who* has only recently increased its willingness to include athletes. Hence the early periods are not really comparable and nothing more can be made of this issue. This inference is based on a special test of the listings. The baseball stars voted Most Valuable Player (MVP) in each of the two major leagues between 1937 and 1940 were checked in the 1944-45 *Who's Who* as well as the National Football League's MVP and leading scorers for 1938 through 1940 (this allowed the directory a few years lag time to include them). None of the eight baseball stars were listed in *Who's Who*, despite the fact that the list included Joe DiMaggio, Jimmy Foxx, Hank Greenberg, Bucky Walters, and the like. By contrast, six of the eight baseball MVPs selected during several years before the 1974 *Who's Who* are found in that directory. Likewise, whereas none of the six star professional football players were included in the earlier *Who's Who*, four of six recent choices were found in the current directory. Hence, the shift in listing policies makes it difficult to compare earlier trends.⁴

⁴ This also means that for some purposes it would

Although religion declined even further in 1974 from its incredible role in 1924, it was still a more important factor for blacks than any of the other groups, with 6% so represented vs. 1 to 3% among the others. Likewise, authors are still relatively prominent among blacks in the current period; small in number, 4% of the black sample, this is greater than the figure for any other population.

Business alone is the second most common source of eminence for all of the white groups, but for blacks it is the fifth most important pathway into *Who's Who*, accounting for only 6% of blacks as contrasted with 18 to 24% of the whites. Medicine and law are also important pathways into *Who's Who*, ranging from third to sixth place among each of the white groups, but are fourteenth and fifteenth, respectively, for blacks. Only two practicing black attorneys are included in our sample of 125 blacks, whereas this category ranged from 10 and 9% of Jews and English to 4% for Italians and Scandinavians. Eminent blacks are now more likely to originate from the realms of business and banking than before, 8%, as opposed to none in the first period and only one black in 1944. But bear in mind that this is still well below the figures for the white groups, which range between 21 and 29%.

Government and politics has become an important source of black eminence in *Who's Who*. This category combines such diverse and relatively infrequent listings as congressmen, military officers, judges, governors, diplomats, public officials, mayors, and the like. In 1924-25, only one black was so classified; in 1944-45, 7% of all blacks were in this domain and currently government and politics accounts for 13% of all black listings. This steady increase has moved blacks from the lowest level in the first period, when government and politics was the source of from 8

be desirable to recompute the distribution for 1974-75 and exclude athletes for blacks and other groups in order to examine the data over time on a comparable basis. However, it is probably the case that there are many other shifts in the overall distribution of occupations listed in *Who's Who* which reflect changes in their numerical frequency and their perceived importance.

to 20% of the listings for the other groups, to the second highest role in the current, with Scandinavians exceeding blacks by only 1%. Although government obviously plays an increasingly important role in the national life, witness the increase in the proportion of the GNP that it consumes (Lieberson, 1971); surprisingly the government plays a decreasing role since World War II as an entry into *Who's Who*. A government linkage existed for 22% of the English listed in the 1944-45 directory, whereas it was 9% in 1974, a figure which is actually lower than it had been in 1924. The greatest role of government for both Scandinavian and Jewish listings had been in 1924-25, with figures for both groups declining in the succeeding two periods. Italians and Slavs both experienced declines during the most recent span, from 15 to 6% and from 14 to 7%, respectively. These drops were also greater than the gains occurring between 1924 and 1944. Hence government contributes a relatively smaller proportion for all five of the white groups than it ever did before, whereas the opposite is the case for blacks.

Again, these findings do not necessarily mean that the white groups are massively less active in government than they used to be, although clearly blacks have captured a more important position than ever held before and obviously such gains must come at the expense of whites (although not necessarily the ones under study here). Nevertheless much of the shift occurs because the role of other activities has increased more rapidly and more members of some of the groups are making it into *Who's Who* through different routes. For example, government has played a relatively smaller role for Jews than for any other of the white groups under consideration. In 1924-25, it was the source of 8% of the group's listings in the directory, the same level as for Italians and well above the miniscule black representation. In 1944-45, the percentage among Jews had declined to 6, lower than any of the other groups including blacks, and in 1974-75 government was the primary affiliation of only 4% of the Jews in *Who's Who*. But bear in mind that the prevalence of Jews in *Who's Who* had in-

creased from an estimated 1.59 per 10,000 in 1924 to 1.97 in 1944 and 8.39 in 1974 (Table 1). Multiplying these rates by the proportion of those listed in *Who's Who* with political or governmental affiliations in each period, one estimates that the rate of representation in *Who's Who* from the governmental source dropped slightly from .12 per 10,000 in 1924 to .11 in 1944 and then increased to .32 per 10,000 in 1974-75.⁵ In other words, the actual prevalence of Jews in *Who's Who* through politics has gone up even though the proportion of Jews in *Who's Who* through politics declined. Obviously with such small numbers one cannot take these figures too seriously because of enormous sampling errors, but the figures do serve to illustrate how changes in the relative predominance of an occupation in the *Who's Who* listings for a given ethnic or racial group do not necessarily mean similar changes in the proportion of members of a given group reaching the directory through the specified occupation.

In general, there have been some radical changes among eminent blacks in the United States. Initially it was possible to make it almost solely through some form of segregated activity, for example, black colleges or religious organizations. This is no longer the case, but segregated sources of esteem are still important. Granted that blacks are disproportionately active in sports and probably entertainment, part of the reason for their high showing in such activities is their extremely low showing in many other sources of white entrance into national prominence. If the 1974-75 black eminence ratio was the same as it is for the total population, 3.42 instead of .37 per 10,000, and if all of the black gains were to come from nonentertainment sources, then singer-musicians would comprise .0164 of all eminent blacks instead of .0152 ($.37/3.42 \times .0152$) and athletes would be .0156 instead of .0144 ($.37/3.42 \times .0144$). In other words, if we artificially assume no discrimination in sports and entertainment presently and hence that their entry is as great as it ever will be, then black parity with the remain-

⁵ Based on the following multiplications: $(.0758)(1.59) = .12$; $(.0560)(1.97) = .11$; $(.0387)(8.39) = .32$.

der of the nation in the achievement of eminence would mean a massive drop in the relative importance of these activities. Nevertheless, at present sports and show business do provide blacks with eminence on a truly national plane with a white audience included and in competition with whites. Looking at the past, this is an important factor insofar as much of the earlier achievers were restricted to a black professional audience and could not compete directly with whites. The recent changes among black college professors also reflect the movement into a broader form of eminence. To be sure, virtually no accomplished scholar in the various disciplines achieves the kind of popular fame that is possible for sports and entertainment figures, but within a more restricted audience of professional peers the same process of competition across racial lines and with a mixed audience exists.

ETHNIC OCCUPATIONS

Given these observations on black sources of success, the issue naturally arises of how different this black pattern is from those experienced by the white groups. Of particular interest are the new groups who first began their migration to the United States in sizable numbers at the tail end of the last century—Italians, Slavs, and Jews.⁶ Part of the answer has been touched on earlier in our discussion of blacks, but some added considerations are appropriate here.

Slavs in 1924 were most concentrated in the university world, with the second most important source of eminence being singers and musicians. As noted earlier, the college activities were all confined to nationally recognized institutions of the highest quality. The six Slavic musicians are all in the classical domain, including two members of the Boston Symphonic Orchestra, a composer who also served as president of the Chicago Music School, a concert violinist, an operatic tenor, and a pianist-composer. Of these six, five were

born outside the United States. Observe that the white ethnic groups enjoyed two special advantages over blacks. First, their distinctive ethnic cultural concerns fit in nicely with the high culture supported by the nation's elite. There was no problem or difficulty including such outstanding artists in *Who's Who* since they obviously added great distinction and their accomplishments would also be fully appreciated outside the United States. For blacks, by contrast, their distinctive artistic accomplishments, such as in music, were not yet considered noteworthy or in any way comparable in accomplishment to the classics. As a consequence a form of esteem and national recognition was not possible for blacks whereas it was an immediate entry for those members of the new European groups who excelled. The second point is that five of the six Slavic musicians mentioned in 1924 were foreign-born. Unlike the black population, the new Europeans could be aided through the migration of distinguished ethnic compatriots from the homeland. (The exact role of the immigrant will be analyzed later.)

It is clear that at the very outset the Slavic group making it into *Who's Who*, although small in number and representing a low success rate at that time, was making it through national as opposed to segregated pathways. To be sure, music represented an ethnic pathway in some respects, but it represented a pathway that the larger white society had defined as admirable and respectable, classical as opposed to merely popular. It was part of the European civilization and culture that was a mark of cultivation to enjoy and respect; in short it was "legitimate."

A somewhat similar pattern is found for Italians in 1924–25. The largest single category is singer-musician. Eight of the nine Italians so listed are affiliated with operas in either a singing or administrative role and the remaining one Italian is a harpist and composer. All but one of the eight were foreign-born. Hence the comments about Slavic musical figures applies here too. By contrast, most blacks making it into *Who's Who* through music in 1944 were in the classical tradition. It was not until the post-World War II period that

⁶ Bear in mind that not all Jews are new Europeans. One does not know how much of a role Jews from Germany and other older sources are playing in the early listings.

music closer to black folk traditions became a source of entry.

Jews had a different set of major pathways into the 1924-25 *Who's Who*. Although the university world in 1974-75 was to become the single most important source of eminence for Jews and more important to them than any other group, in this early period the percentage of Jews so concentrated was smaller than among all other groups except Italians. The figure for Jews was 12%, compared with 38 for Slavs, 25 for the English, and 23 for both Scandinavians and blacks. The low percentage for Jews is surprising, but easily explained. The reader will recall from Table 1 that in 1924-25 the prevalence of Jews in *Who's Who*, although distinctly below the frequency for the English, is still far greater on a per capita basis than among the remaining groups. Accordingly, if one multiplies the prevalence figures in Table 1 by the proportion shown in Table 4 who are academics, it turns out that Jews have a higher frequency of making it into *Who's Who* as academics than all but the English ethnic group in 1924. In other words, the importance of academia is low for Jews relative to other occupational pathways in 1924 when compared with other ethnic groups, but not in absolute terms. Nevertheless this was still the third most important source of eminence then, with a list of institutions less distinguished than the Slavic one but still including faculty at Columbia, Johns Hopkins, Pittsburgh, and Wisconsin.

Law and medicine were the two most important sources of eminence for Jews in 1924. Seventeen percent of listed Jews were lawyers (the next highest figure for the remaining groups was 7) and 14% were doctors (as opposed to 8% for the next highest). As for the nine physicians listed, as is typically the case for the other groups, many held medical school appointments. This is to be expected since the average physician, specialist or not, is unlikely to be listed in the directory. There were several other important sources of prominent Jews in that period. Religion amounted to 11% of the eminent Jews, but this figure was to go progressively downward as Jews expanded into other domains, with religion accounting

for 1% of all eminent Jews in 1974-75. The only other source contributing 10% or more of Jews in 1924 was the combined categories of business and banking (six were sampled in business and one in banking). The combined percentage is higher than for most of the other groups in 1924.

By 1974 there were some radical changes for these new European groups, with the most important and basic one being a shift towards similarity in their occupational patterns. As noted above, Jews occupy an exceptionally high concentration in academic positions, but law, medicine, and business have all declined as exceptional routes for the group when compared with other white populations. Between 1924 and 1944, when blacks increased from 3 to 10% in music, the figure for Italians halved and likewise went down substantially for Slavs. Both groups went down further by 1974-75; indeed singers and musicians are now only 2% of the listed Slavs but they are still an important, albeit diminished, 8% for Italians. Blacks, of course, had skyrocketed during this same span. It is interesting to note that both groups shifted towards popular music in this period, but much more so for blacks.

BIRTHPLACE FACTORS

It is well-known that many eminent Europeans migrated to the United States, not only as refugees during the 1930s, of which there were an extraordinary number (see Fermi, 1971), but also in earlier decades as well. Could it be that these immigrants were a specially important factor in the groups' representation in *Who's Who* as well as the increases enjoyed by them? The answer is not immediately clear because the vast bulk of immigrants from South-Central-Eastern Europe during the heyday of migration possessed minimal education, little in the way of financial resources or occupational skills, and were often unable to speak English—hardly the ideal starting point for attaining a distinguished career. It may be that the dramatic and exceptional contributions of such immigrants as Marc Chagall, Franz Alexander, Bruno Bettelheim, Bela Bartok, George Gamow,

Table 4. Percent Distribution by Occupation of Persons Listed in *Who's Who*

Occupation	Black						English						Italian						Jewish						Scandinavian						Slavic					
	1924-25		1944-45		1974-75		1924-25		1944-45		1974-75		1924-25		1944-45		1974-75		1924-25		1944-45		1974-75		1924-25		1944-45		1974-75		1924-25		1944-45		1974-75	
Professors and Administrators	23	52	19		25	21	34	8	21	26	12	21	46	23	32	38	38	20	44																	
Physicians	3	2	2		7	2	3	8	4	10	14	10	5	2	7	6		7	3																	
Lawyers	4	1	2		7	5	9	—	1	4	17	14	10	7	5	4	4	4	7																	
Business	—	—	6		5	17	24	8	7	18	9	14	19	4	7	20	4	4	7																	
Bankers	—	1	2		1	2	5	12	8	3	2	2	2	2	4	1	6	—	6																	
Combined Government and Political ¹	1	7	13		14	22	9	8	15	6	8	6	4	20	16	14	12	14	7																	
Authors	9	8	4		8	4	3	12	3	2	8	4	3	7	—	2	—	3	—																	
Singers/Musicians	3	10	15		—	—	—	35	16	8	3	5	3	5	—	1	23	15	2																	
Religious	48	8	6		5	7	3	—	3	1	11	9	1	9	7	2	—	4	2																	
Athletes	—	—	14		—	—	1	—	—	4	—	—	—	—	—	—	—	—	2																	
All Other ²	10	9	18		28	20	10	12	21	19	21	17	11	21	25	9	24	18	13																	
Total Number	80	84	125		100	100	120	26	75	125	66	125	155	56	100	125	26	71	125																	

¹ This is a combination of separate categories that were later combined, after all indexes were computed, and include: public officials, congressmen, military personnel, judges, governors, diplomats, public service employees, mayors, and United Nations officials.

² These include the following occupations for each group as follows:

Rudolph Carnap, George Szell, Albert Einstein, Igor Stravinsky, Paul Tillich, Enrico Fermi, Jacques Lipchitz, and John Von Neumann (all taken from the list of photographs in Fermi, 1971) was more than overbalanced proportionately by the great mass of migrants.

Shown in Table 5 is the foreign-born component in each group's listings. As one might expect, this component has generally declined over time—the exceptions may be in part due to the sampling variations that occur with such small numbers. The foreign-born accounted for a sizable part of the Italian, Jewish, Scandinavian, and Slavic groups' listings 50 years ago, ranging from more than a quarter of the Scandinavians to nearly half of the Slavs. There was a sharp drop-off in the role of the foreign-born between 1944 and 1974 for these four groups. It may well be that the less rapid decline for Jews and Slavs between 1924 and 1944 is due to the specially significant refugee movement in the period leading to World War II.

It is necessary to compare the immigrant contribution to *Who's Who* with their proportion of residents in the nation. There are some obvious difficulties, not the least of which is that the census delineated ethnic origin only for the immigrant and second generations.⁷ Using 1940 census data which cross tabulate generation (foreign-born, or second generation) with age, the proportion of *Who's Who* listings that might be expected to be foreign-born (given the age distribution in *Who's Who* and the aforementioned cross tabulations) was determined for the Italian, Slavic, and Scandinavian groups.⁸ This cannot be done for Jews because there is no simple correspondence between that group and some country of

Table 5. Percent Foreign-Born

Group	Year		
	1924-25	1944-45	1974-75
Black	10.00	1.19	—
English	8.00	3.00	7.50
Italian	42.31	36.00	13.60
Jewish	31.82	29.60	9.68
Scandinavian	28.57	20.00	0.80
Slavic	46.15	47.89	17.60

birth. At any rate, for each group the actual foreign birth percentage in *Who's Who* is far less than one would expect based on the age distribution of persons in the directory and the age distribution of the immigrants and second generation components of the group. If *Who's Who* in 1944 had the same proportion of immigrants as was found among those in the age groups represented in that directory, about 72% of the Slavs would have been foreign-born instead of 48. Likewise, 20% of the Scandinavians in *Who's Who* in 1944 are foreign-born, but one would expect this to be 47% if the immigrants living in the United States were contributing their proportionate share, given their age composition and the age distribution of Scandinavians listed in *Who's Who*. Finally, although immigrants comprise a sizable 36% of the eminent Italians listed, one would expect 80% if the age distribution is standardized.

In short, the eminence rates for the immigrants were lower than those found among the American-born generation. A sizable part of the recent gains in the eminence rates of the new European groups is probably due to the increases in their American-born component. Nevertheless, it is clear that the immigrants did include some world famous intellectuals, artists, and other persons of importance. Accordingly, the new Europeans did have an "ethnic legitimation" going for them that was denied to blacks, first because there were great barriers to African immigration and second because the cultural and intellectual attainments of the new Europeans could be immediately absorbed into the larger American society—witness the classical music illustrations cited earlier. Blacks did not have these "flagship" models.

⁷ Although the expected foreign-born percentage would go down if data were available for later generations, it is unlikely that it would go down that much because the bulk of these groups had not been in the country that long and, moreover, a sizable part of the third generation was probably too young in 1944 to be serious contenders for *Who's Who*.

⁸ This was based on Polish, Czech, and Yugoslavian groups combined for the Slavs (no other Slavic group data available), and Norwegians, Swedes, Danes, and Finns combined for Scandinavians. The basic data source for the necessary tabulations is U.S. Bureau of the Census, 1943.

Birthplace differences among blacks. Differences between southern- and northern-born blacks on a wide variety of characteristics have undergone considerable debate and speculation in recent years (see, for example, Long and Heltman, 1975; Lieberman and Wilkinson, 1976; Lieberman, 1978). There is certainly some grounds for considering southern-born blacks in the North as analogous to the immigrant generation of a white ethnic group in the United States (Lieberman, 1973). In this case, we can ask if differences exist between the two birthplace groups in their propensity to make *Who's Who* that are analogous to those found between European generations. Listed in Table 6 in the first column is the percent southern-born among all American-born blacks in the directory in each period. There is a surprising increase in the first 20 years from 81 to 87% southern, which is then followed by a sharp drop-off in the ensuing 30 years. Obviously these figures have meaning only when compared with the southern-born percentage of all American blacks. The figures in the second column are the percentage of blacks in each period that one would expect to be of southern birth given the age distribution of persons in *Who's Who* and the proportion of southern birth in each age.⁹ A figure could not be calculated for the earliest period because the necessary cross tabulations are not available, but one can be certain it would be in excess of the 92% reported for 1944.

Southern blacks in each period were less likely to make it in *Who's Who* than were northern-born blacks. In no small way this reflects the opportunity structure being even more limited in the South than in the North. Indeed, there is evidence that Southerners in *Who's Who* generally had higher outmigration rates (Gee, 1937). The rise between 1924 and 1944 in the southern role is somewhat puzzling in view of the decline in their proportion of the black population. One may speculate that it is probably due to the extraordinary

Table 6. Percent of American Blacks in *Who's Who* Born in the South

Year	Actual	Expected
1924-25	81	N.A.
1944-45	87	92
1974-75	59	80

handicaps experienced by the adult cohorts alive in 1924. Considering that many of the people who make it into *Who's Who* are relatively old, it means that a sizable number of those listed in the early edition had been born during slavery or shortly after its demise. Hence the southern-born probably had a relatively slight chance of reaching some form of national eminence when compared with northern blacks. Thus, although the southern component of the black population declined between 1924 and 1944, its decline was probably not yet that great, particularly in the crucial older ages, and this drop was therefore more than compensated for by the relative increases in the opportunities for southern-born blacks making it in *Who's Who*. Bear in mind, however, that the northern-born blacks were still relatively more apt to reach such eminence.

The shift between 1944 and 1974 is rather striking; the gap between actual and expected southern-born representation actually widened during this span. Since the occupational distribution of blacks listed in *Who's Who* has changed radically between 1944 and 1974, birthplace differences among blacks in these occupations could possibly help to account for the remarkable drop in southern-born blacks listed in *Who's Who*. Indeed, singers and musicians were much less likely to be of southern birth than were black academics; but changes in occupational composition go only a small way in explaining the sharp drop-off in the southern-born component in *Who's Who*. We are unable to determine whether the greater opportunities experienced by blacks in recent decades first occurred in the North or some other factor(s) operated, but this is a matter which calls for further work. Incidentally, so too does the curious finding about birthplace and occupational activity; in 1974-75, 79% of

⁹ These are based on the age distribution of blacks in *Who's Who* coupled with the percentage of all blacks in the United States at each age who were born in the South.

professors in *Who's Who* were of southern birth, and likewise 71% of the athletes, but only 29% of blacks in music were born in the South. In terms of the basic issue, however, the data clearly indicate that generally southern-born blacks are less likely to achieve recognition in *Who's Who*—a pattern analogous to that experienced by the white groups.

DIFFERENT CAREER PATHS: A CLOSER LOOK AT LAWYERS

One of the most subtle but important questions deals with how ethnic groups with the same training differ in the paths they may take to national eminence. Persons with a law degree are particularly interesting because a wide variety of career routes to *Who's Who* is possible. Among these are: various government activities, including both elected and appointed positions; a partnership in a prestigious law firm that serves blue-chip corporations and other prominent clients; employment in the major corporations themselves as the in-house legal chief or in a major nonlegal administrative post; positions on the board of such corporations. Accordingly there is the possibility of determining whether the law, like the entertainment situation described earlier, has different routes for blacks and the white ethnic groups.

For this purpose, all persons who had a law degree in the survey were included regardless of whether their current occupation listed in Table 4 is lawyer. The numbers are still rather small and the conclusions are tenuous. Many lawyers, particularly those apt to be selected for *Who's Who*, move in and out of different activities or hold several affiliations simultaneously. Accordingly, we have made no attempt to classify them exclusively in terms of one activity or another, but have listed them in more than one class if that was appropriate.

Earlier in this century the law provided very little opportunity for blacks to get anywhere. They were more or less wiped out in the South (Myrdal, 1944:325-6), there was only a small population base in the North to support political ambitions, and discrimination was too great for cor-

porate activities to provide much of an opportunity for either employment in the law firms that served them or with the corporations themselves. In 1924 there were only five eminent blacks with a law degree, 6% of all blacks listed. Of these, two had connections at one time or another with government. The percentage affiliated with the government has increased considerably through the years to the point that 11 of the 13 eminent blacks holding a law degree in 1974 had government linkages—the highest percentage of any of the groups (85%). At present, it is largely through government affiliations that blacks with a law degree can make these listings. Only one black in any of the three samples had a law degree *and* corporate affiliation. This was the founder, editor, and publisher of the black newspaper, *Chicago Defender*, who was president and treasurer of the publishing company.

If it is clear that blacks have had a difficult time getting anywhere with a law degree in the corporate world, it is also clear that English surname whites were in the opposite situation in both the midforties and midseventies. Of 13 English surname lawyers in 1944-45, six were affiliated with government and seven with corporations. In 1974-75, six were government and eight were corporate. In 1944-45, by contrast the relative numbers for government vs. corporate affiliations were, respectively, 7 and 2 for Italians, 17 and 1 for Jews, 6 and 1 for Scandinavians, and 8 and 2 for Slavic names with a law degree. For the English, ethnic origin is not a disadvantage in politics, particularly on the highest levels of government, but there are opportunities open to them in the corporate world that until recent years were essentially not available to blacks or some of the other white groups.

Regarding the latter groups, one observes a position intermediate between blacks and the English. Among Jews there has been a decline in the proportion affiliated with government, particularly in the post-World War II period, such that their concentration in this area in the latter period is not much greater than that reported among the English—13 lawyers with government affiliation vs. 14 with corporate

ties in the 1974 sample. The Slavs have also exhibited a sharp drop in their concentration in government since World War II but these shifts are less striking for Scandinavians and Italians. It is clear that blacks are lagging behind the white groups in the domains where their lawyers can make it, with a thrust towards government occurring at a time when its relative importance is declining for the other groups.¹⁰

A BRIEF CONCLUDING COMMENT

There is no point in attempting to review all of the specific findings reported in this comparative study of ethnic pathways to *Who's Who* and their frequency of attainment. It is clear that blacks at the very outset of the period were strikingly different from the white groups in the degree to which they could only attain prominence in a segregated black world. The new European groups differed from blacks in several ways. Their rates of eminence, although quite low when compared with English-Americans or the national average, were still initially higher than the black rate. Moreover, between 1924 and 1944 they began to increase whereas the black rate was more or less stagnant. Blacks have begun to move in the post-World War II period, but they are starting with a very low base point compared with the new Europeans and are still far behind. Several of the new European groups are still behind the national average themselves, but the relative standing of the older stock English-Americans is no longer as dominant as it once was.

A major difference between the new Europeans and blacks stems from the cultural position of the groups. What was distinctively black in the arts was not particularly appreciated by the larger white-dominated society in the sense of attaching much esteem or prestige to black culture. By contrast, the European immigrant groups, although highly despised, did have some members who were able to

use their "high culture" as a pathway to distinction since it was considered part of western tradition. This also meant that whites from these groups could break into a national network whereas blacks could not. One is reminded of the fact that most all of the white ethnic groups were able to generate ethnic cooking that was attractive to others whereas this was not the case for blacks.

One similarity that does seem to exist between the groups is that blacks appear to be following some of the same pathways to eminence as these new immigrant groups pursued in earlier periods; for example, government and music. One of the unrecognized features of sports and entertainment is not merely that successful blacks in these pursuits serve as role models, but rather that these pursuits themselves are, in historical terms, relatively unique in providing a means for blacks to attain prominence on a national stage in competition with whites for a market that is neither restricted nor segregated. This is strikingly different from the major routes to eminence available to blacks only a few decades ago, but it is similar to the pathways pursued by the new European groups from the outset. However, it would be a mistake to assume that the patterns will be fully analogous. This is because blacks are beginning to make their move at a time when the society itself has changed.

APPENDIX

DETERMINATION OF RATES

The Social Security Administration not only tabulates the total number of persons who have ever received a social security number since the inception of the program in 1936, but they also provide analogous tabulations for specific surnames. Through September 1974 there were 239,927,977 records issued (Social Security Administration, 1975), which means that the U.S. population around midyear of 1974 was about .88 of this number. Even though a large number were issued to persons who by now are deceased, it is possible to estimate the underlying population for each set of ethnic surnames if one assumes that this ratio applies about equally to all of the ethnic surnames used in this study. For example, there were 199,446 persons with certain Italian surnames on the Social Security roles in 1974. Multiplying this figure by .88, we estimate the number of persons with such surnames in the United States

¹⁰ The third important category of eminent lawyer activity, law schools, is not considered because we have discussed academics earlier. All other sources of eminence are too small in number to be analyzed here.

population to be 175,512 and this figure was then used to determine the denominator for the incidence of Italians in *Who's Who*. (The numerator, however, is not the entire 125 Italians selected for 1974, but considerably less than that because there were not enough Italians in *Who's Who* with these surnames to give a big enough N. Accordingly, we added other Italian surnames from Smith, 1973.) This procedure was followed for each of the white groups in 1974. It assumes, of course, that the .88 ratio is the same for all of the groups. In effect, this assumes that the relative number of persons in the United States with a given set of surnames is the same as their proportion of all persons on the Social Security roles.

For earlier periods, we assumed that the specified ethnic surnames for a given group was approximately the same proportion of the total U.S. population in 1924 and 1944 as it was in 1974 and hence, using the U.S. population figures for the appropriate year, estimated the group's underlying denominator for their *Who's Who* listings. This basic procedure was modified to take into account the possibility that a given set of ethnic surnames may have expanded or declined over time in its relative numerical importance in the nation. This was done through a simple regression procedure because surname lists were not available for 1944 and, of course, the Social Security Act had not been passed in 1924. But we did have Social Security surname lists for 1936 (Weyl, 1966) and 1964 (unpublished data furnished by the Social Security Administration). An example will make these steps clear. In the preceding paragraph we inferred that there were 175,512 persons with certain Italian surnames in the United States in 1974. Dividing this figure by the entire United States population, we infer that these specific Italian surnames are .000830 of the total population in 1974. Using the 1964 and 1936 surname lists from the Social Security Administration and adjusting by a ratio between the total United States population in each period and the total number of SAA names (which leads to ratios of 1.15 and 1.43, respectively), we infer that these specific Italian surnames were .000875 and .000851 of the nation's population. Regressing these proportions on the years for which they were obtained, it is possible to estimate the surnames' proportion of the population in 1924 and 1944 (using the regression equation with x as 1924 and 1944). In the event that there is no correlation between the proportion and time, this procedure will generate the mean proportion for the three periods, which is not an unreasonable solution either.

Two special problems exist for persons of English origin. Weyl (1966:22) found some indication of differences between English surnames in their *Who's Who* rates and our results confirm this, although too late to affect our procedure for using English surname data to get occupational and other char-

acteristics of those listed in *Who's Who* (this is largely based on persons with Walker as a surname, with blacks excluded through a check with the black lists and the black directory). However, for computing the English rates of eminence, we used six surnames: Carter, Clark, Hall, Hill, Walker, and Wright. A second adjustment was required because there is a certain overlap between English surnames and the surnames found among blacks. According to Weyl (1966:21), about 19% of persons with these English names in the United States are black. The English rate was therefore adjusted by dividing by .81 ($1 - .19$).

It is not necessary to use the surname procedure for the black population. For both 1924 and 1944 we have lists purporting to include all blacks reported in *Who's Who*. Accordingly, we simply divide these numbers by the total black population in each year to obtain an appropriate rate. For 1974 there was no such listing and an alternate procedure was used. The sample of blacks listed in the 1974-75 *Who's Who* was obtained within an alphabetical range beginning with "A" until the desired number was obtained. The ratio of the total black listings known for 1944-45 to the number that would have been obtained using an analogous procedure for 1944 was determined and then multiplied by the number obtained in 1974-75. This provided an estimate of the total black listings in *Who's Who* in 1974 and could then be divided by the total black population in the nation for that year.

Finally, in order to obtain a prevalence rate for 1974 comparable to the rates reported in Larson (1958) for earlier periods, the number of listings in a sample of pages in *Who's Who* was multiplied by the total number of pages in the directory and then divided by the population figure for the nation.

There are a number of obviously arbitrary decisions involved in these rates, for example, all sorts of assumptions are made on the basis of small samples. The figures reported are basically prevalence rates rather than incidence rates, that is, the estimated number of persons of a given group is expressed per 10,000 members of the population alive presently rather than in terms of the probability of entering *Who's Who* during a specified period of time. Since there are some survivors from one *Who's Who* to another, albeit not too many, ethnic differences in survivorship could affect inferences about change. Likewise, no adjustment is made for the fact that age is related to the chances of being included and, in turn, the ethnic groups differ among themselves in their age composition. These and other less than ideal procedures aside, there is every reason to believe that the results reported in Table 1 represent the best estimate possible at this time of the ethnic prevalence rates in *Who's Who* and provide reasonable comparisons of their changes over time.

Black, 1924:	Artist (1), Educator (5), Journalist (1), Dentist (1), Actor (1), Librarian (1).
1944:	Director of Nonprofit Organization (1), Educator (2), Journalist (5), Actor (1).
1974:	Artist (3), Journalist (2), Actor (3), Hospital Administrator (1), Cartoonist (1), Dancer (2), Social Worker (3), Civil Rights Worker (2), Clothing Designer (1).
English, 1924:	Architect (1), Engineer (2), Artist (5), Educator (2), Journalist (15), Actor (1), Scientist (1), Art Promoter (1).
1944:	Architect (4), Engineer (2), Artist (1), Educator (1), Journalist (8), Scientist (1), Curator (1), Social Worker (1), Dentist (1).
1974:	Artist (2), Journalist (2), Actor (1), Hospital Administrator (1), Association Executive (2), Librarian (1), Cartoonist (1).
Italian, 1924:	Artist (4), Actor (8).
1944:	Engineer (1), Artist (16), Educator (1), Journalist (1), Comedian (1), Motion Picture Director (1).
1974:	Architect (4), Engineer (1), Artist (6), Journalist (4), Actor (1), Television Director (1), Librarian (2).
Jewish, 1924:	Engineer (2), Artist (5), Educator (2), Journalist (5), Dentist (3), Inventor (2), Labor Organizer (2).
1944:	Architect (1), Engineer (2), Artist (5), Educator (2), Journalist (4), Cryptologist (1), Curator (1), Social Worker (1).
1974:	Architect (1), Engineer (1), Artist (2), Hospital Administrator (1), Association Executive (3), Physicist (1), Television Director (1), United Nations Official (1).
Scandinavian, 1924:	Architect (5), Engineer (4), Artist (4), Educator (2), Journalist (2), Librarian (2), Scientist (2).
1944:	Architect (5), Engineer (4), Artist (4), Educator (3), Journalist (6), Scientist (1), Political Worker (2).
1974:	Architect (3), Engineer (1), Journalist (3), Hospital Administrator (1), Association Executive (1).
Slavic, 1924:	Engineer (8), Artist (4), Journalist (4), Curator (4), Lecturer (4).
1944:	Engineer (3), Artist (8), Director of Nonprofit Organization (1), Educator (1), Economist (1), Journalist (3), Scientist (1).
1974:	Architect (1), Engineer (1), Journalist (5), Actor (1), Chess Champion (1), Hospital Administrator (1), Association Executive (1), Educator (1), Physicist (1).

REFERENCES

- Baltzell, E. Digby
 1966 " 'Who's Who in America' and 'The Social Register.' " Pp. 266-75 in Reinhard Bendix and Seymour Martin Lipset (eds.), *Class, Status, and Power*. New York: Free Press.
- Bardolph, Richard
 1957a "Negro religious and educational leaders in Who's Who in America, 1936-1955." *Journal of Negro Education* 26:181-92.
- 1957b "The Negro in Who's Who in America, 1936-1955." *Journal of Negro History* 42:261-82.
- Burke, W. J. and Will D. Howe
 1943 *American Authors and Books 1640-1940*. New York: Gramercy.
- Cortese, Charles F., R. Frank Falk, and Jack K. Cohen
 1976 "Further considerations on the methodological analysis of segregation indices." *American Sociological Review* 41:630-7.

- Fermi, Laura
1971 *Illustrious Immigrants*. Chicago: University of Chicago Press.
- Fleming, G. James and Christian E. Burckel (eds.)
1950 *Who's Who in Colored America*. Yonkers-on-Hudson: Christian E. Burckel.
- Gee, Wilson
1937 "The 'drag' of talent out of the South." *Social Forces* 15:343-6.
- Guzman, Jessie Parkhurst (ed.)
1947 *Negro Year Book: A Review of Events Affecting Negro Life 1941-46*. Atlanta: Foote and Davies.
- Larson, Cedric A.
1958 *Who: Sixty Years of American Eminence*. New York: McDowell, Obolensky.
- Liebertson, Stanley
1971 "An empirical study of military-industrial linkages." *American Journal of Sociology* 76:562-84.
1973 "Generational differences among blacks in the North." *American Journal of Sociology* 79:550-65.
1975 "Rank-sum comparisons between groups." Pp. 276-91 in David R. Heise (ed.), *Sociological Methodology*, 1976. San Francisco: Jossey-Bass.
1978 "A reconsideration of the income differences found between migrants and northern-born blacks." *American Journal of Sociology* 83:940-66.
- Liebertson, Stanley and Christy A. Wilkinson
1976 "A comparison between northern and southern blacks residing in the North." *Demography* 13:199-224.
- Long, L. H. and L. R. Heltman
1975 "Migration and income differences between black and white men in the North." *American Journal of Sociology* 80:1391-409.
- Marquis Company
1924 *Who's Who in America*, Vol. 13. Chicago: A. N. Marquis.
1944 *Who's Who in America*, Vol. 23. Chicago: A. N. Marquis.
1974 *Who's Who in America*. 38th ed. Chicago: Marquis Who's Who.
- Matney, William C. (ed.)
1976 *Who's Who among Black Americans*. 1st ed. Northbrook: Who's Who among Black Americans.
- Myrdal, Gunnar
1944 *An American Dilemma*. New York: Harper.
- Smith, Elsdon C. (ed.)
1973 *New Dictionary of American Family Names*. New York: Harper and Row.
- Social Security Administration
1975 *Report of the Distribution of Surnames in the Social Security Number File, September 1, 1974*. Washington, D. C.: Department of Health, Education, and Welfare.
- U.S. Bureau of the Census
1943 *1940 Census of Population, Nativity and Parentage of the White Population*. Washington, D. C.: U.S. Government Printing Office.
- Weyl, Nathaniel
1966 *The Creative Elite in America*. Washington, D. C.: Public Affairs Press.
- Work, Monroe N. (ed.)
1925 *Negro Year Book, 1925-26*. Tuskegee Institute: Negro Year Book.
- Woods, Frederick Adams
1914 "The racial origin of successful Americans." *Popular Science Monthly* 84:397-402.

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Robin M. Williams, Jr., Department of Sociology, Cornell University, Ithaca, New York 14853.

EQUAL EMPLOYMENT OPPORTUNITY LEGISLATION AND THE INCOME OF WOMEN AND NONWHITES*

PAUL BURSTEIN
Yale University

American Sociological Review 1979, Vol. 44 (June):367-391

This article examines the impact of federal equal employment opportunity legislation on the income of white women, nonwhite women, and nonwhite men relative to the income of white men at the national level since the late 1940s. The analysis differs from those previously published in comparing all groups with white men, including changes in attitudes in the analysis, and dealing in detail with enforcement of the laws. The model developed in the article works well when used to examine increases in nonwhite income, but does not deal satisfactorily with the incomes of white women. The findings indicate that there are important differences between race and sex discrimination which will have to be taken into account in theories of labor market discrimination.

The struggle to end discrimination against minorities and women has played a central part in recent American history. Much of the struggle has been devoted to the achievement of equal opportunity in employment. To help women and minorities achieve equal opportunity, Congress passed several equal employment opportunity (EEO) laws in the 1960s and 1970s. The aim of this article is to gauge the national-level impact of these laws on the incomes of women and nonwhites relative to those of white men. The focus will be on the four laws most directly related to employment in the entire civilian labor force—the Equal Pay Act of 1963, Title VII of the Civil Rights Act of 1964, and the 1972 laws amending each of them.¹

The analysis differs in three significant respects from comparable ones published previously. First, the incomes of white and nonwhite women, as well as nonwhite men, will be compared with those of white men, who were clearly intended to be the comparison group in the EEO laws. No previous aggregate-level studies gauge the laws' impact on women relative to white men.

Second, changes in attitudes toward discrimination will be included in the models. The economic theory of employment discrimination, which provides the theoretical framework for this study, hypothesizes that the white male "taste for discrimination" will affect the incomes of those discriminated against. Past applications of the theory, however, make no attempt to examine the consequences of

* Address all communications to: Paul Burstein; Department of Sociology; Yale University; New Haven, CT 06520.

I would like to thank Richard Berk, Claude Fischer, Owen Fiss, Florence Katz, and Stanley Masters for helpful comments on an earlier draft of this paper. An earlier version was presented at the 1979 annual meeting of the Eastern Sociological Society, New York.

¹ The Equal Pay Act (Public Law 88-38, 77 U.S. Statutes At-Large 56-57) prohibited differential rates of pay for women and men who do equal work, with some exceptions. Title VII (PL 88-352, 78 Stat. 241-268) prohibited many discriminatory employment practices. Enforcement relied very heavily on the private actions of aggrieved individuals; the Equal Employment Opportunity Commission (EEOC) created by the Act had no enforcement powers of its own; its role was limited primarily to conciliation.

Among the significant exceptions to the prohibitions against discrimination was one that permits discrimination on the basis of sex (but not race) when it is found to be a "bona fide occupational qualification" for the job. The Equal Employment Opportunity Act of 1972 (PL 92-261, 86 Stat. 103-113) extended the coverage of Title VII and gave the EEOC the power to go to court when conciliation efforts failed. Section 906 of the Education Amendments of 1972 (PL 92-318, 86 Stat. 235-381) abolished many of the exemptions in the Equal Pay Act. For detailed descriptions and analyses of these and related laws, see Task Force on Women, 1975: chap. 3; Gitt and Gelb, 1977; Harvard Law Review, 1971; Fiss, 1971. Other federal laws may affect the economic situation of women and minorities; this paper deals with those laws intended to have the most direct and widespread impact.

changes in tastes. This paper will demonstrate the importance of including approximate measures of tastes in the analysis.

Third, the paper will refine considerably the treatment of EEO law enforcement, which was measured in very simple ways in past work.

The improved model developed in the paper works well when used to examine changes in the incomes of nonwhite men and women relative to those of white men, but does not deal satisfactorily with changes in the incomes of white women. The findings indicate that there are important differences between race and sex discrimination which will have to be taken into account in theories of labor market discrimination.

EMPIRICAL CONTROVERSY

Have EEO laws had a significant, favorable impact on the economic situation of women and minority group members? Experts disagree. Legal scholars involved in employment discrimination cases tend to see the laws' effects as slow and uncertain. Professor Derrick Bell, Jr. (1977:681) of Harvard Law School, for example, introduces a symposium on equal employment law by writing that he has

serious doubt as to the long-term effectiveness and worth of equal employment laws. . . . If the country were really committed to eradicating the social and economic burdens borne by the victims of employment discrimination, it would have fashioned a far more efficacious means of accomplishing this result. At present, the law channels charges of employment discrimination into a burdensome, conciliation-oriented administrative structure that functions, in the mean, on a case-by-case basis, depending on effectively-prosecuted litigation and a sympathetic judiciary for even the hard-won progress thus far achieved. Even the most wildly optimistic among us cannot reasonably hope that reliance on this complex and uncertain process will close the wide gap in income standards and unemployment rates between black and white and male and female employees.

Herbert Hill, the foremost expert on black labor and the American legal system, arrives at a cautious but somewhat less pessimistic conclusion about blacks in

the labor force. He feels that the apparent victory achieved by the passage of the 1964 Civil Rights Act was largely illusory in the short-run because employers and unions vigorously defended their traditional discriminatory practices for years. Years of litigation began to turn the tide, however, and he concludes that "[b]y the mid-1970s the impact of the law was evident as court orders began to make the elimination of racial discrimination an economic necessity" (1977:4).

Neither Bell nor Hill presents quantitative evidence to support his conclusions. The most sanguine conclusions about the impact of EEO legislation are those of Richard Freeman and Stanley Masters, economists who attempted to analyze the laws' impact on black-white economic differences. Freeman (1973:118-9) concludes:

The income and occupational position of black workers improved significantly relative to those of whites in the sixties. . . . Much of the improvement in the black economic position that took place in the late sixties appears to be the result of governmental and related antidiscriminatory activity associated with the 1964 Civil Rights Act.

Masters (1975:143) similarly concludes that his findings support "the liberal view that there should be a continuous improvement in the relative position of blacks once some precipitous event like the Civil Rights Act and the pressures that led to it have occurred."²

² Other works on the aggregate-level consequences of federal legislation attempt to show that the gains of black men have been limited to the South (Vroman, 1974; McCrone and Hardy, 1978). There are also some studies which proceed at lower levels of aggregation, such as industries or SMSAs; findings about the efficacy of EEOC enforcement, Office of Federal Contract Compliance activities, and other programs, are mixed; see, e.g., Adams, 1972; Beller, 1977; Bergmann and Lyle, 1971; Heckman and Wolpin, 1976; Smith and Welch, 1977. A study of Canadian equal pay legislation claimed to show it had no effect (Gunderson, 1975).

There are also a number of studies which purport to gauge the impact of civil rights laws by simply presenting data on black-white or female-male differences along some dimension before and after the passage of the laws, without controlling for any other factors; Niemi (1974) is typical. The conclusions of these latter studies, carried out without controls for other relevant variables, cannot be taken seriously.

Thus, those who deal with the laws tend to see their effects as slow and uncertain. Those who deal with income data tend to see the laws' effect as immediate and consequential so far as the black-white income ratio for males is concerned, and have nothing to say about the incomes of women as compared with white men.

THEORETICAL ISSUES AND MODELS OF LEGISLATIVE IMPACT

Economic Models: Theory vs. Application

Almost all the quantitative work on the effects of EEO legislation has been written by economists who draw heavily on Becker's (1971) *Economics of Discrimination*. Three studies form the core of empirical work on the aggregate-level effects of EEO legislation: Landes's (1968) article on the impact of state fair employment practices laws on the economic status of nonwhites; Freeman's (1973) paper on the impact of the 1964 Civil Rights Act; and Masters's (1975: chap. 6) chapter on the effects of the 1964 Act on the economic situation of black men. Other works use very similar theoretical approaches, variables, and analytic techniques.

Although the economic theory of labor market discrimination has ramified beyond concise description (see Marshall, 1974; Blau and Jusenius, 1976), those aspects of the theory applied in the empirical works can be summarized as follows: Differences in the labor market treatment of racial minorities or women begin with the taste for discrimination of employers, employees, or customers. Because white men do not like members of other social categories in some way—they may not like to work with them, to see them have equal status positions, or whatever—they act as if they are willing to pay a monetary price to avoid associating with members of such categories. White employers who have a taste for discrimination, for example, may be willing to hire black workers only if the blacks will work for lower wages than whites of equal skill, with the extra money going to the employers as payment for overcoming their aversion to blacks. Under specified conditions, this behavior lowers the relative incomes of blacks. Laws prohibiting discrimination in

the labor market may work if they raise the price discriminators have to pay for indulging their tastes—by threatening them with fines or with having to make compensatory payments to those discriminated against, for example.³

Thus, Freeman (1973:93–4) argues theoretically that two important forces appear to have reduced discrimination in the labor market between 1948 and 1972: a change in the demand or taste for discrimination, which plays the critical role in Becker's theoretical model, and a change in the cost of discrimination due to enforcement of Title VII of the 1964 Civil Rights Act and other national policies. Masters (1975:141) similarly argues that changes in the labor market position of blacks could have been brought about by legislation and attitude change.

Within this theoretical context, those studying the consequences of EEO legislation pursue a similar course: they basically regress some measure of black-white differences in the economic sphere, such as the black-white income ratio, on variables gauging the general state of the economy and the passage or enforcement of EEO laws. Finding significant coefficients for the EEO variables, they conclude that the legislation has significantly reduced some economic differences between blacks and whites (though Landes finds this may have been at the cost of increased black unemployment).

Unfortunately, the studies are flawed in ways that make it difficult to accept their findings. Both Freeman and Masters argue that changes in black income may be due to two factors: change in the demand for discrimination and EEO legislation. The empirical analyses include only one of the factors, however—EEO enforcement—and attribute changes in black incomes to this factor alone. Although both are tentative in their conclusions (with Masters admitting that his es-

³ Although the notion that discrimination can be reduced by making it expensive is formally derived from economic theory, economic sanctions are seen as the most effective way to reduce discrimination by many others as well; see Hill, 1977:4; Levitan et al., 1975: chap. 13; for evidence of corporate attitudes, see "Business Resisting U.S. on Halting Work Bias," *New York Times*, May 26, 1978: D1.

timates are upperbound estimates of the true impact of the laws), neither tries to include changes in the taste or demand for discrimination explicitly in the analyses (see Freeman, 1973:94, 105; Masters, 1975:141, 143).

Past analyses thus appear to have a serious specification problem. EEO enforcement activities are positively correlated with increases in favorable attitudes towards blacks and women in the labor force. Consequently, including a measure of demand for discrimination in the analysis would reduce the apparent impact of EEO legislation, possibly to insignificance.⁴

Economists have developed an elaborate rationale for not using attitude data to measure tastes or demand, and the argument makes sense in many cases.⁵ To a sociologist, however, it seems plausible that the factors that probably helped produce EEO legislation in the first place—changing attitudes, in particular—continue to operate after the law is passed and have an independent impact on the economic standing of groups protected by the legislation. It seems much better to include a rough proxy for taste for discrimination in the analysis than to ignore it completely.

⁴ The only empirical attempt to measure taste for discrimination in a study of EEO legislation impact is Bergmann and Lyle's (1971) study of black-white occupational differences across metropolitan areas and industries. Using the 1968 Wallace vote as a proxy for white taste for discrimination, they found that this variable explained black-white differences better than differences in education did, and *better than the existence of a state fair employment practices law*. But they did not use actual attitude data or follow up on the idea.

⁵ Strictly speaking, there is a difference between a taste for discrimination and a demand for it. Changes in tastes, which economists tend to consider entirely exogenous to their models, may lead to changes in demand; this may be seen very roughly as akin to the gap between attitudes and behavior in social psychological research. In practice, neither tastes nor demand for discrimination are measured directly. Berger's sophisticated discussion of the factors affecting employment discrimination states many of the same issues in sociological language, and is consistent with the argument made here; unfortunately, his empirical work cannot answer the questions raised by his theoretical formulation; see Berger, 1967: chap. 4; Freeman, 1973:93-4; Becker, 1971: chap. 9.

Unfortunately, the hypothesis that attitudes about discrimination and EEO laws may affect the economic status of women or nonwhites has not been tested by sociologists. Changes in the economic status of blacks relative to whites and women relative to men are a major concern in the recent literature on stratification, but most works either attribute such changes partly to changes in laws and attitudes without providing evidence (Farley, 1977:206), mention the possibility that laws may have had an impact without investigating it (e.g., Featherman and Hauser, 1976:464; Snyder and Hudis, 1976:215, 231), or simply ignore the legislation when discussing the economic status of women and blacks.

Realism in the Analysis of Enforcement

There is an additional difficulty in the extant work. Although Landes and Freeman try alternative specifications of their EEO enforcement variables, their measures do not seem like realistic operationalizations of their theory.⁶ They are interested, essentially, in costs imposed on employers (or unions or employees) for discriminating; their notion is that employers will change their behavior once they realize that it will be costly not to do so. Ideally, therefore, the best predictor of EEO legislation efficacy should be a measure of the costs incurred by employers who continue to discriminate after discrimination is prohibited—a measure of the probability of being caught multiplied by the penalty imposed would be best. Such a measure is impossible to find (though some possible alternatives will be discussed below), but the measures actually employed, EEOC expenditures measured different ways, seem insufficient. During the entire period studied by Freeman, the EEOC had no enforcement powers; it was limited to attempting to conciliate complaints of discrimination. Freeman acknowledges that the EEOC variable is a proxy for all federal enforce-

⁶ Landes is less relevant here because he was concerned with state legislation. Masters's operationalization is the simplest of all—he simply includes two time trend variables and a dummy variable to mark the passage of Title VII.

ment activities, but this does not seem adequate justification for the magnitude of the gap between the variables required by the theory—actual costs—and those used.

In order to assess satisfactorily the impact of EEO legislation, realism about the enforcement process seems essential; the measures of enforcement effort should have some fairly clear relationship to the actual likelihood that those who discriminate will have to pay a penalty for doing so.

This consideration leads to three changes in the way enforcement will be dealt with here, as compared with past work. First, although there is no way to measure the actual cost to employers of disobeying or complying with the laws, data are available on the amount of money awarded under the provision of the Equal Pay Act to those discriminated against. These data will be included in the analysis.

Second, because the binding enforcement procedures of Title VII involve court proceedings (rather than administratively issued cease-and-desist orders or some other mechanism), some measure of the decisions being made by the higher U.S. courts on EEO cases should be included in the analysis. When the laws were passed, it was not known, of course, how they would be interpreted by the courts. Employers would be most likely to take the law seriously, it can be argued, only if it were clear that the law would be interpreted to make employers liable to substantial financial penalties if they continued to discriminate (see, e.g., Levitan et al., 1975:290–2). The first U.S. Court of Appeals decision that could be seen as making this point clearly was not decided, however, until 1971 (*Robinson v. Lorillard Corp.*, 44 F.2d 791; petition for writ of certiorari dismissed, 404 U.S. 1006 [1971]; also see *Albermarle Paper Co. v. Moody*, 422 U.S. 405 [1975]). The Supreme Court did not decide any Title VII cases until 1971 (see Equal Employment Opportunity Commission, 1972:23–31), and doctrine remains unsettled in many areas (see Venick and Lane, 1977; compare *University of California Regents v. Bakke*, 46 U.S. Law Week 4896–4936 with *Communication Workers of America v.*

EEOC, 46 U.S. Law Week 3801; see also *Newsweek*, July 10, 1978:32, “The Hard Cases Coming”).

Past empirical work has thus ignored the cumbersomeness of the legal process and the slowness with which the meaning of the laws becomes clear (see Bell’s [1977] statement quoted above, and, e.g., Levine and Montcalmo, 1971). This paper will attempt to take actual enforcement possibilities into account by examining all EEO decisions by the U.S. Supreme Court and Court of Appeals to determine the number and proportion of cases decided in favor of women and racial minorities.⁷

Third, EEO legislation can be effective only if it is utilized; a law that is too cumbersome and costly for people to use is not likely to be effective. Measures of EEOC expenditures, Equal Pay Act payments, and court decisions essentially gauge the supply of enforcement activities. It seems important to gauge the effective demand for EEO enforcement as well; this can be done by considering the number of charges brought to the EEOC and the number of cases brought before the courts.

As applied to the study of EEO legislation, Becker’s theory has been taken to imply that a decline in the taste for discrimination and an increase in its cost will lead to an increase in the relative income of the group that has been discriminated against, everything else being equal. That is also the point of view of this paper. But this article differs from past work in proposing that changes in taste should be included explicitly in the analysis and that it is necessary to be as realistic as possible in the analysis of costs likely to be imposed upon discriminators.

RELATIVE INCOMES OF WOMEN AND NONWHITES: DESIGN AND DATA

What Is to Be Explained

The analysis focuses on changes in the incomes of nonwhite men, nonwhite

⁷ In addition, EEOC expenditures could be hypothesized to be more effective after the EEOC was given enforcement powers in 1972 than they were before. Unfortunately, the time since 1972 is too brief to permit tests of differential impact.

women, and white women, each measured as a percentage of the income of white men. Three time series are analyzed: median wage and salary income of year-round full-time workers, 1955–1975; median wage and salary income of all those with such income, 1948–1975; and median total money income, 1948–1975 (these are the entire periods for which data are available on an annual basis; for information on the sources and construction of all variables, see the Appendix). Each time series can be usefully distinguished from the others. The measure of the earnings of full-time workers is probably the best measure of what EEO legislation is designed to affect—opportunities available to full-time employed members of the labor force. Median earnings of all labor force participants captures changes in opportunities available to those employed part-time, voluntarily or otherwise. And median total money income, by including income from social security payments, welfare, dividends, interest, etc., is probably the best measure of overall economic well-being (see Freeman, 1973:73; Masters, 1975:142).⁸

As described above, past analyses have compared the incomes of nonwhite or black men with those of white men. Freeman also analyzes the determinants of black female income, measured as a proportion of white female income; no analyses have compared female income with white male income in the context of EEO impact.⁹

⁸ Determinants of mean total money income were also analyzed, but the result did not differ in any material way from those concerning median total income, and have been excluded to shorten the presentation. Means and medians are the best simple measures of group income, but they do not adequately represent all aspects of income distributions, such as increasing variance in income within social groups; see Wilson, 1978; Villemez and Rowe, 1975. These problems will be dealt with elsewhere.

⁹ Stevenson (1975) analyzes changes in white female income relative to that of white males, but does not consider the impact of EEO legislation. This analysis contrasts whites to nonwhites, not blacks. This is partly because the EEO laws prohibit all racial discrimination, not just discrimination against blacks, and partly because the data for much of the time series are available only for nonwhites and whites. Because blacks are about 90% of nonwhites, the results would be altered very little in any case.

This analysis breaks precedent by comparing the incomes of nonwhite and white women with those of white men. The justification for doing this is straightforward. The manifest purpose of the legislation was to help ensure that those who had been discriminated against would in the future be treated as well as white men. Because white men are the implicit comparison group in the law, they should be the comparison group in any study of relative incomes.¹⁰ In addition, comparing nonwhite women with white women, as has been customary, rather than with white men, exaggerates their progress, because they are being compared with a group that suffers itself from discrimination (Bell, 1972:365; Figures 1 and 2 will make this very clear).

Explaining Income Differences

Changes in the relative incomes of blacks and whites and men and women customarily are seen as determined mainly by four types of variables: those measuring the relative productivity of members of the different groups, the overall demand for labor in the economy, changes in attitudes toward different groups, and EEO enforcement activity (see, for example, Arrow, 1972; Bell, 1974; Haworth et al., 1975; and, of course, Freeman, 1973, and Masters, 1975).¹¹ All four will be included in this analysis.

Even if all labor market discrimination were to disappear immediately, blacks and women would not achieve economic equality with white men for a long time,

¹⁰ One justification in past work for comparing women of different races with each other rather than with men was probably that this implicitly controlled for many differences between men and women in labor force behavior. Although some remain convinced that many of these differences are voluntary (Gwartney and Stroup, 1973), the women's movement and the inclusion of sex discrimination in the EEO legislation makes this "voluntariness" problematic. Because the legislation is intended to reduce many of the presumed differences in labor force behavior, it is inappropriate to build such presumptions into the analysis.

¹¹ Masters and others have tried to show that a variety of other possible influences, such as migration and housing segregation, do not have a significant impact on black-white differences (Masters, 1975: chaps. 3–5).

because they (particularly blacks) have been denied equal access to education and training. Members of groups that have been discriminated against can expect to achieve equality in incomes only as they approach equality in productivity. In this analysis, the measure of relative productivity will be the ratio of median years of education completed by members of the relevant groups. This is a crude gauge of relative productivity, but is standard and practical (see Welch, 1973).

The economic progress of groups that have been discriminated against is widely seen as dependent upon tight labor markets. Because white men can resist opening new job opportunities to nonwhites and women—through union seniority rules, on-the-job hostility and sabotage, etc.—nonwhite and female progress is much more likely when there are lots of jobs available (see, e.g., Bell, 1974). The demand for labor will be measured by the overall national unemployment rate.

Attitudes toward nonwhites and women in the labor force, taken as rough indices of tastes for discrimination, will be measured in terms of the only three questions asked repeatedly in national surveys during most of the period since 1948. The first was asked of whites six times between 1944 and 1972: "Do you think Negroes should have as good a chance as white people to get any kind of job, or do you think white people should have the first chance at any kind of job?" The second was asked of adult Americans five times between 1942 and 1962: "Do you approve of paying women the same salaries as men, if they are doing the same work?" The third was asked five times between 1938 and 1976: "Do you approve of a married woman earning money in business or industry if she has a husband capable of supporting her?" Public opinion toward blacks and women in the labor force became steadily more favorable over time, making it possible to estimate attitudes for those years when the questions were not asked (R^2 's for regressions of attitudes on time were .99, .58, and .94 respectively; see Figure 3 and Appendix for details).¹²

¹² These data are clearly not the best indicators of taste for discrimination that could be devised.

EEO enforcement activity was measured in a variety of ways. The supply of administrative EEO enforcement was measured in terms of expenditures by the EEOC, expenditures per black and female member of the labor force, cumulated expenditures, expenditures per charge processed, and Equal Pay Act underpayments disclosed. Judicial enforcement was gauged by the annual and cumulative number and proportion of race and sex discrimination cases decided in favor of women or minorities by U.S. Courts of Appeals and the U.S. Supreme Court. The demand for EEO enforcement was measured in terms of the number of actionable complaints of discrimination—race, sex, and total—processed by the EEOC each year. The aim was to gauge in many ways the intensity of the problem, the resources available to cope with discrimination—both total incidence and complaints—and the timing of effective implementation of the law.

Some Expectations

The basic hypothesis of the study is straightforward: everything else being equal, increases in the productivity of women and nonwhites, decreases in unemployment, decreases in discriminatory attitudes, and increases in the supply of and demand for EEO enforcement activities should have independent positive effects on the incomes of nonwhite men, nonwhite women, and white women relative to those of white men.

One caveat is in order. Although neither Becker nor those who have tested his theory generally distinguish between race discrimination and sex discrimination (see Becker, 1971: 106–7), other people have argued that the two are different with different causes and consequences that bear on the analysis. As it turns out, the

Ideally, we would like annual data on attitudes of theoretically distinguishable groups—employees, employers, customers—toward various aspects of labor market relationships (willingness to work with members of particular groups, to have them as supervisors, etc.). But the data used are the only relevant time series data available. For a more general review of changes in attitudes toward blacks, see Burstein, forthcoming.

hypothesis is generally supported by the evidence for nonwhite men and women, but not for white women. Some possible reasons for this will be discussed below.

FINDINGS

A Preliminary Picture of the Data

Figures 1 through 5 and Table 1 provide some essential preliminary information about the phenomena under consideration.

Figures 1 and 2 portray changes in the ratio of the incomes of nonwhite men, nonwhite women, and white women to those of white men. The figures show that nonwhite men and women have made considerable gains in relative income during the last 20 to 30 years, but that they still have a long way to go before catching up with white men. The figures show a slight upward trend for the entire period; the trend appears to have accelerated since Title VII went into effect in 1965, and may even have accelerated slightly again since 1972, when the law's enforcement provisions were strengthened. Thus, for example, the ratio of nonwhite to white male wage and salary incomes among year-round full-time employees rose only from .63 in 1955 to .66 in 1964, but then rose to .70 in 1972 and .77 in 1975.

The picture is quite different, however, for white women. The ratio of white female to male wage and salary incomes for full-time workers fell fairly steadily from approximately .64 in 1955 to .58 in 1974, and the ratio of median total money income has also fallen (the picture of earnings for all in the labor force is like the picture for full-time workers, and is left out to save space). The ratio for total money income stopped its decline and then began to rise after the passage of Title VII and the Equal Pay Act, but the ratio for full-time workers did not. White women have not been gaining from recent social and legal changes in the same way as nonwhite men and women. (The figures also demonstrate that analyses which compare nonwhite women with white women rather than white men will exaggerate the progress of nonwhite women in the struggle against discrimination.)

Figure 3 presents estimated changes in public opinion on the labor force participation of women and nonwhites since the 1940s. At least with regard to statements of principle, prejudice against women in the labor force seems to be a greater problem than prejudice against blacks. Almost all whites agree that blacks should have an equal chance at jobs, and have for years; change since the end of World War II has been dramatic. Changes in attitudes toward female participation in the labor force have also been great, but considerable antipathy remains; as recently as 1976, almost a third of the public still felt that women who had husbands who could support them should not work for pay (women were only slightly more favorable in their responses than men were). Nevertheless, attitudes toward both blacks and women have become much more favorable. This trend is consistent with the trend in nonwhite incomes (male and female), but is contrary to the trend in white female incomes.

Figure 4 documents the very significant increases in levels of education attained by nonwhites relative to whites. It also shows that white and nonwhite men have been catching up to the women of their own races educationally. The relative decline of educational attainment among white women is consistent with the decline in relative income documented above; whether such an interpretation makes sense substantively is a question that will be dealt with below. In any case, the educational levels of the four groups reached virtual parity by the mid-1970s.

Figure 5 gives some indication of the timing and intensity of the EEO enforcement process; it pictures the cumulative number of race and sex discrimination cases—brought under the four laws dealt with here—decided by U.S. Courts of Appeals and the Supreme Court. To the extent that a complex and controversial set of laws like the EEO laws can have substantial impact only after they have been interpreted by higher courts in a way offering some relief to the disadvantaged, the impact of the laws would be slow in coming. Although the Equal Pay Act was passed in 1963 and Title VII in 1964, with each taking effect a year later, no cases

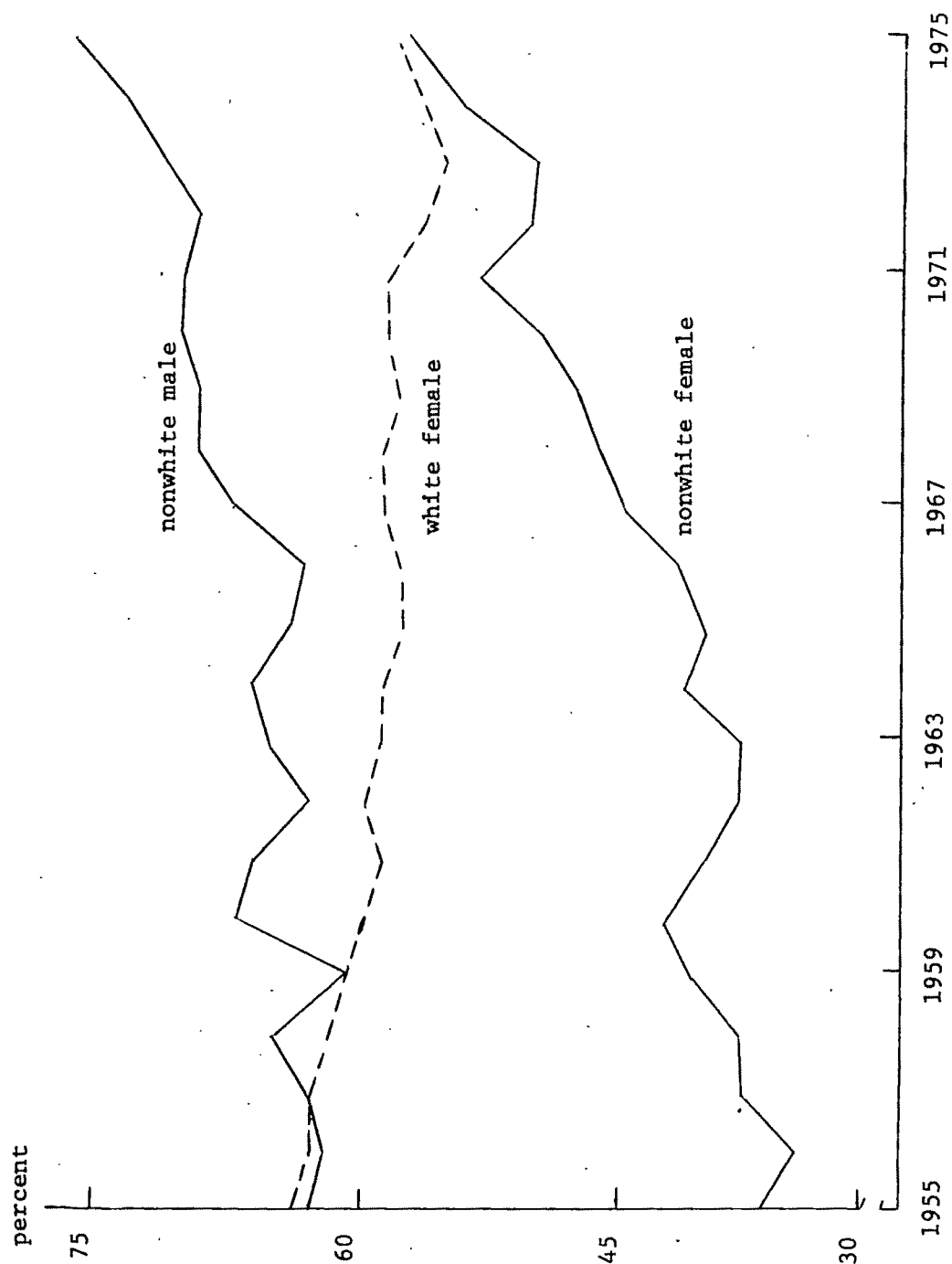


Figure 1. Median Incomes (Wages or Salary) of Year-Round, Full-Time Workers, As Percentage of White Male Incomes

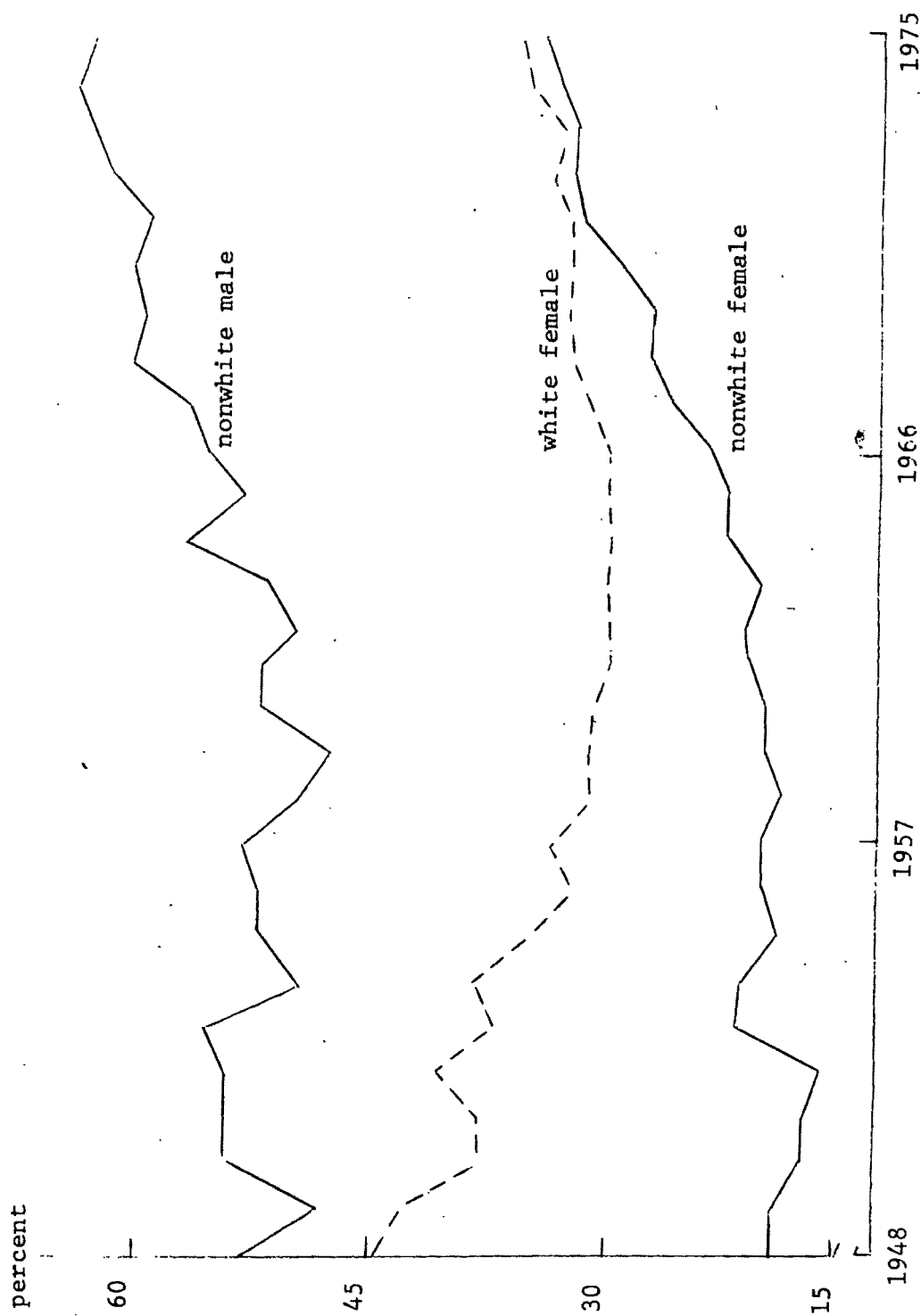


Figure 2. Median Total Money Income, As Percentage of White Male Income

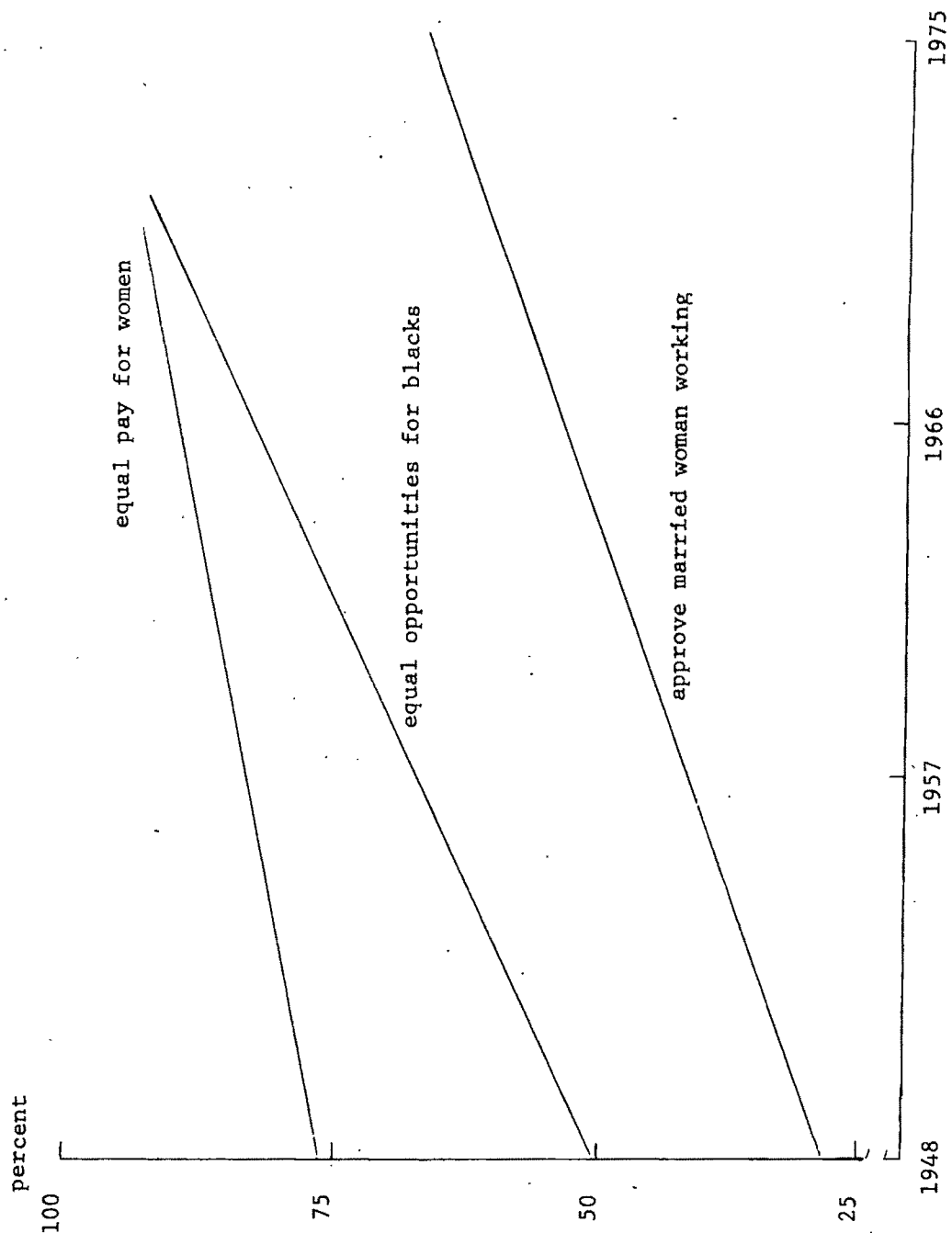


Figure 3. Public Opinion (Estimated) on Equal Employment Opportunity

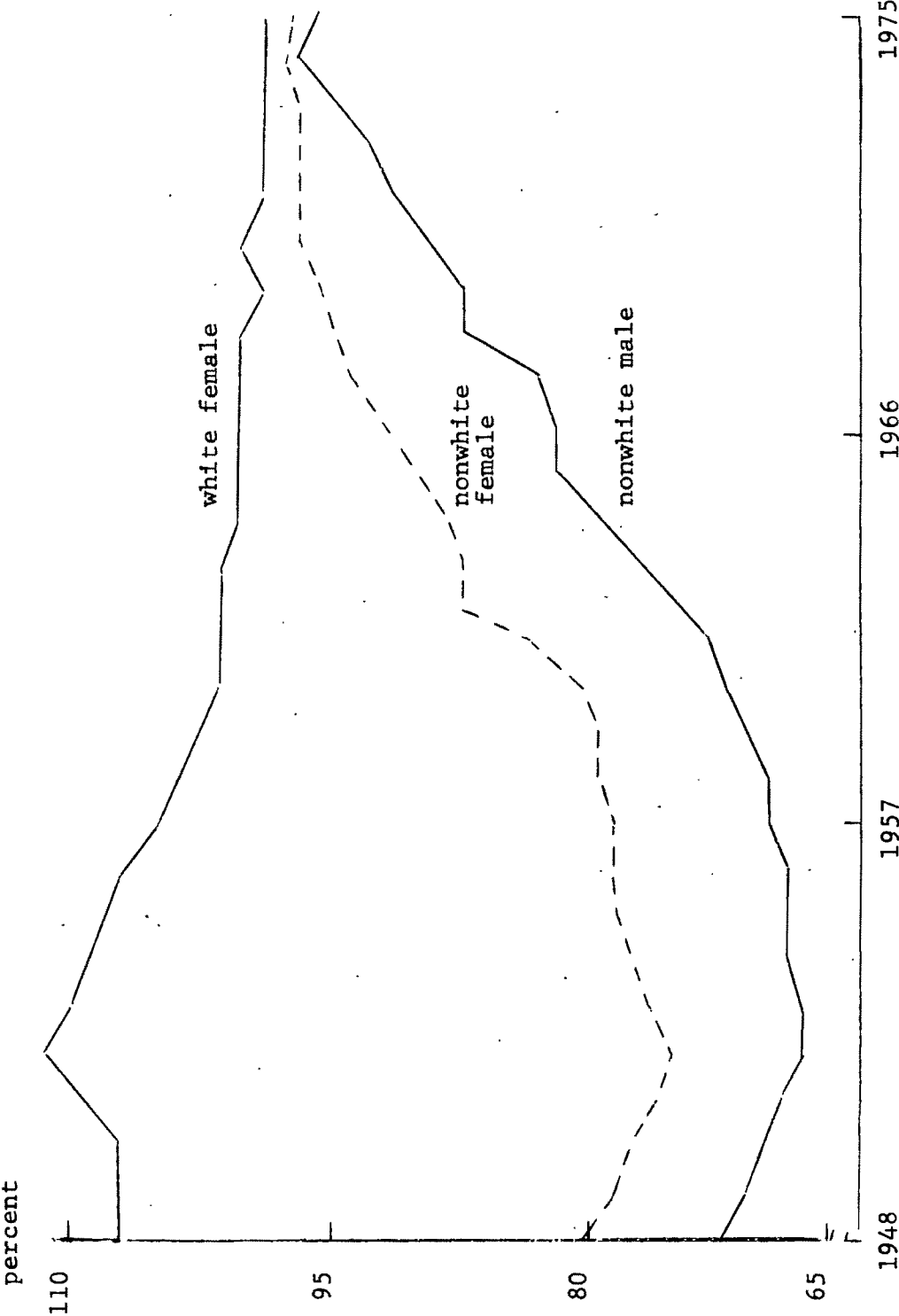


Figure 4. Median Years of Education, As Percentage of White Male Education

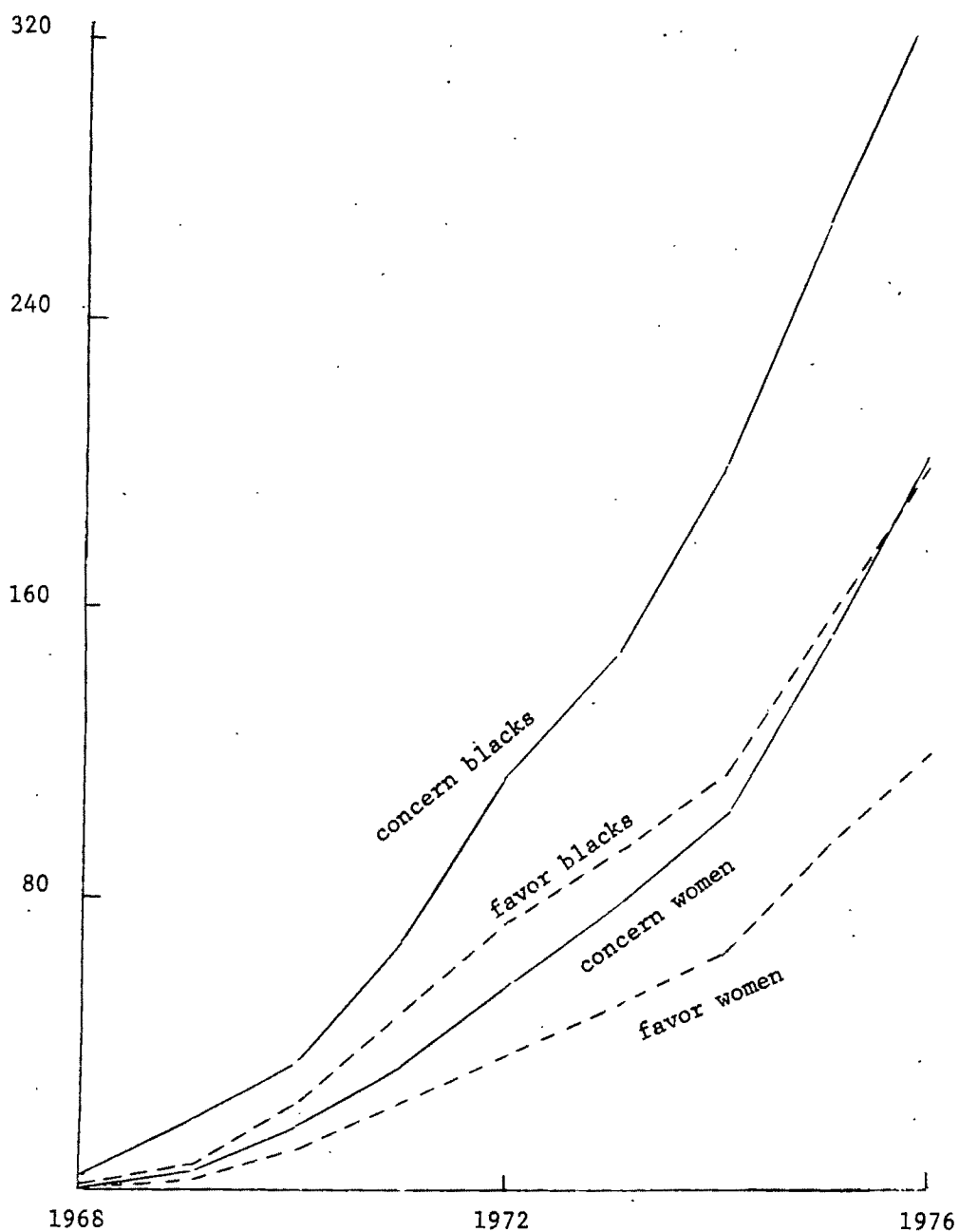


Figure 5. Court Decisions under EEO Laws—Numbers Concerning and Favoring Minorities and Women

under these statutes were decided by appellate courts until 1967, and the numbers decided grew slowly for several years thereafter. The meaning of EEO legislation and the possible magnitude of sanctions that could be applied to discriminators were not clear for years after the passage of the laws (and are still fuzzy in important areas).

Table 1 provides additional information about the EEO enforcement effort. Objectively, it is not obvious what would constitute an "adequate" enforcement effort in the short term. EEOC expenditures have risen every year, both in current and constant dollars, just about keeping pace with the increasing number of complaints ("actionable charges") made to the Commission. If we view EEOC expenditures as an investment in equal opportunity that will have effects beyond the year of the expenditures (Freeman, 1973:100), the total amount spent by the EEOC per black and female member of the labor force, cumulated over eleven years, was just under four dollars (1967 dollars). An investment of four dollars a person on a major social problem does not seem like a lot, especially when contrasted with the amount spent on training programs (Masters, 1975:152), and it is, in fact, fairly widely agreed that the EEOC is very inadequately funded considering the magnitude of its task.¹³

The table also shows that the number of charges has continued to rise, taking a particularly big jump in 1972, the year the law was strengthened. To the extent that the number of charges reflects the number of grievances, employment discrimination is hardly declining as a problem. Finally,

¹³ See Levine and Montcalmo, 1971; U.S. Commission on Civil Rights, 1977: 329-35. EEOC expenditures are just a part of total government expenditure on equalizing employment opportunities (see U.S. Office of Management and Budget, 1978:275-87), and are used here as an indicator of activity rather than as an inclusive measure (more inclusive data are not available for the entire time period). Politically, it is probably not an accident that the EEOC has been underfunded. Some members of Congress may have underestimated the magnitude of the EEOC's task and felt they were voting sufficient funds, but it is also true that, once Title VII passed, its opponents worked hard to minimize the resources available to the EEOC (see, e.g., U.S. Senate, 1970: 1043ff).

Table 1. Equal Opportunity Enforcement Activity

Year	E.E.O.C. Annual Appropriations, Thousands of Current \$ ^a	Cumulative E.E.O.C. Expenditures per Covered Person, 1967 \$	E.E.O.C. Actionable Charges, Race Discrimination	E.E.O.C. Actionable Charges, Sex Discrimination	Equal Pay Act Underpayments Disclosed, Thousands of Current \$	E.E.O. Cases Decided on Appeal, Race Discrimination	E.E.O. Cases Decided on Appeal, Sex Discrimination
1965	0	0	0	0	156	0	0
1966	3,250	.10	3,254	2,053	2,098	0	0
1967	5,240	.26	4,786	2,003	3,252	2	0
1968	6,655	.45	6,650	2,410	2,488	4	2
1969	9,120	.69	9,562	2,689	4,585	12	10
1970	13,400	1.01	11,806	3,572	6,119	16	5
1971	16,185	1.37	15,394	5,820	14,843	33	17
1972	23,000	1.75	27,468	10,436	14,031	44	23
1973	32,000	2.37	29,370 ^b	13,692 ^b	18,006	36	24
1974	44,400	3.13	31,272 ^b	16,949 ^b	20,624	51	24
1975	56,140	3.97	33,174	20,205	26,285	69	49
1976					17,952	59	46

^a All E.E.O.C. and Equal Pay data are for fiscal years, which end on June 30 of the calendar year.

^b Estimated.

the table provides evidence that sex discrimination lagged behind race discrimination as an object of concern, both among complainants to the EEOC and in the courts, but that it is becoming an increasingly important part of the administrative and judicial caseload. In light of the figures on income presented above, this is not surprising.

In sum, the incomes and educational levels of nonwhite men and women have improved relative to those of white men, and attitudes toward blacks have become more favorable. The income and educational picture for white women is much less positive. The EEO enforcement effort was slow to begin and seems modest in intensity, but the demands placed upon the system keep increasing.

Multivariate Statistical Models and Analyses

In order to gauge the impact of likely determinants of income ratios, the nonwhite male/white male, nonwhite female/white male, and white female/white male income ratios were regressed on the measures of relative education, unemployment, attitudes, and EEO enforcement activity. There proved to be serious problems of multicollinearity among some variables, however.

Because all three measures of change in attitudes were simple time trends, they were to all intents and purposes perfectly correlated with each other, so no more than one could be used in any equation.

Changes in relative education were very highly correlated with the passage of time as well, and so were correlated very highly with changes in attitudes. The correlation of the nonwhite male/white male education ratio with attitudes on black access to jobs was .97, for example, and introducing both variables into a regression simultaneously produced the outcomes that would be expected in the presence of multicollinearity—large and substantively unlikely variances in the parameter estimates, insubstantial changes in R^2 when variables were added or removed, and decreases in computational accuracy (see the useful discussion in Rao

and Miller, 1971:46–52). This high correlation is probably not a coincidence, and a study of the relationship between the liberalization of attitudes and black access to education would be interesting itself. Within the data set and context, however, there was no way to disentangle the effects of the two variables. The same problem arose with regard to nonwhite women. With regard to white women, liberalization of attitudes has gone along with a decline in relative educational attainment. Substantively, this probably implies that changes in years of education is not a good measure of changes in productivity so far as white women are concerned (Madden, 1978), but in this case the *negative* correlation between public attitudes and educational attainment was so high that both variables could not be used in the equations simultaneously.

In the equations presented, therefore, measures of attitudes and of education are never included in the same equation (cf. Freeman, 1973:101). The extremely high correlation of the variables with each other and with the passage of time reduces the degree to which the results can answer theoretical questions about their separate effects. This is itself a significant finding, however, if only because it implies that past studies may have attributed to changes in education some consequences that were in fact the result of changes in public opinion. The multicollinearity problem does not reduce the predictive value of the equations, of course.

Similar problems arise with regard to the measures of EEO enforcement effort. Although measures such as court decisions, EEOC expenditures, and charges of discrimination can be distinguished theoretically, and although there is no theoretical reason why they should be very highly correlated, in fact nearly all the measures proved to be simple time trends very highly correlated with each other. This was true for EEOC expenditures, expenditures per covered worker, cumulated expenditures, Equal Pay Act payments, annual and total court decisions, charges handled by the EEOC, expenditures per charge, and other measures. Here, as with education and public attitudes, it proves impossible to assess

separately the effects of different interesting variables.

The following variables were included in at least some of the ordinary least-squares regressions actually run. For nonwhite men: the national unemployment rate (denoted *Unempl* in the tables); the ratio of their education to that of white men (*Educ*); the measure of attitudes toward blacks' access to jobs (*Attitude*); the percentage of court cases dealing with racial discrimination decided in favor of minorities each year, lagged one year, included because employers might get a sense for how court enforcement has been proceeding in the short term and respond accordingly (*% Cases*); cumulated EEOC expenditures per nonwhite and female member of the labor force, in constant dollars (*EEOC \$*); the cumulated number of court decisions favoring minority complainants (*N cases*); and the number of actionable charges based on race processed annually by the EEOC (*Charges*).

For nonwhite women. In theory, nonwhite women should gain from efforts to improve the economic situation of nonwhites and of women; in practice, because of the multicollinearity problems just described, it was not possible to separate the effects. The same variables were used for nonwhite women as for nonwhite men, with the exception of education, which was the ratio of nonwhite female education to white male education.

For white women. The following variables were used: the unemployment rate; the ratio of their education to that of white men; the measure of attitudes toward equal pay for equal work for woman; the percentage of court cases dealing with sex discrimination decided in favor of women each year, lagged one year; cumulated EEOC expenditures per nonwhite and female labor force member; cumulated number of court decisions favoring female complainants; and the number of actionable charges based on sex processed annually by the EEOC.

The results are presented in Tables 2 to 4. Table 2 presents the results for nonwhite men ("D-W d" is the Durbin-Watson d statistic). Overall, the results are consistent with the hypothesis that the demand for labor, educational attainment,

public attitudes, and EEO enforcement efforts all have a significant impact on the relative incomes of nonwhite men.¹⁴ It is, however, as noted above, impossible to disentangle the effects of education from those of attitudes, or of the various measures of enforcement effort from each other.¹⁵ Perhaps the most important result is that the impact of EEO legislation is not absorbed into the attitude variable—EEO laws do have an independent effect.¹⁶

Interpreting the coefficients concretely, the coefficients for education cluster around approximately .20, meaning that a 5% increase in the ratio of nonwhite male education to white male education resulted in a 1% increase in the income ratio, everything else in the equations being equal. With nonwhite male education having improved from 71% of white male education in 1948 to 96% in 1975, an increase of approximately 5% in the income ratio could be attributed to the increase in education. Similarly, an increase of about 8% of the white population feeling that blacks should have an equal chance at jobs seems to be associated with a 1% increase in the income ratio.

The unemployment rate has no significant impact on the relative income of full-time workers, as might be expected, since increases in unemployment would simply

¹⁴ The t-statistics should be interpreted cautiously. Berk and Brewer (1977) have argued that statistical inference in many econometric models rests upon untested and even untestable assumptions. Tests of statistical significance in this article mean just what they do in the other relevant studies.

¹⁵ Both Freeman and Masters include time-trend variables in their analyses. As a practical matter, the estimates of EEO impact derived here for nonwhite men will not differ all that much from Freeman's, because the attitude variables included in this study are so highly correlated with the time trend variable he included in his equations. Theoretically, however, the use of attitude data is clearly preferable—it plays a definite role in the economic theory of discrimination, while *time* is not a very useful concept theoretically. In addition, in those situations where attitudes and time are not highly correlated, the coefficients in equations not including attitudes would be biased (see Pfister, 1974:189).

¹⁶ Although the attitude change was probably partly responsible for the passage of the EEO laws, the relationship between laws and attitudes would probably become more complex once the laws are passed, with changing attitudes aiding enforcement and the enforcement of laws hastening attitude change.

LEGISLATION AND THE INCOME OF WOMEN AND NONWHITES 383

Table 2. Determinants of Nonwhite Male Income As Percent of White Male Income, Alternative Specifications

Independent Variables—unstandardized regression coefficients (t-statistics in parentheses)										
EARNINGS OF YEAR-ROUND, FULL-TIME WORKERS										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	46. (6.32)	.49 (1.20)	.21 (2.50)	....	.010 (.63)	1.22 (1.61)	....	....	.87	1.96
2	51. (9.40)	.33 (.86)	....	.16 (2.66)	.0078 (.47)	1.85 (3.16)	....	....	.87	2.10
3	43. (6.05)	.62 (1.44)	.25 (3.13)	....	.014 (.87)	....	.023 (1.09)	....	.86	1.84
4	49. (8.75)	.39 (.95)	....	.18 (3.05)	.016 (.92)	....	.046 (2.60)	....	.86	1.97
5	43. (5.60)	.74 (1.96)	.24 (2.70)	....	.0098 (.55)	....	....	.000075 (.91)	.86	1.79
6	49. (8.29)	.62 (1.64)	....	.16 (2.47)	.0066 (.35)	....	....	.00016 (2.36)	.85	1.86
EARNINGS OF ALL WORKERS										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	51. (7.12)	-.99 (-2.33)	.16 (1.73)	....	.026 (1.09)	3.17 (3.56)	....	....	.84	2.11
2	58. (15.69)	-1.14 (-2.72)	....	.083 (1.82)	.027 (1.19)	3.76 (5.14)	....	....	.84	2.18
3	47. (6.61)	-.94 (-2.06)	.21 (2.36)	....	.038 (1.57)	....	.076 (2.98)	....	.82	2.00
4	56. (14.50)	-1.14 (-2.48)	....	.11 (2.20)	.046 (2.01)	....	.099 (4.43)	....	.81	2.06
5	51. (6.41)	-.72 (-1.70)	.15 (1.44)	....	.018 (.71)	....	....	.00031 (3.00)	.82	2.02
6	57. (14.57)	-.81 (-1.91)	....	.067 (1.35)	.019 (.74)	....	....	.00037 (4.51)	.82	2.06
MEDIAN TOTAL INCOME										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	44. (8.51)	-1.51 (-4.96)	.22 (3.44)	....	.0033 (.20)	2.49 (3.91)	....	....	.89	2.56
2	55. (18.89)	-1.70 (-5.14)	....	.086 (2.41)	.012 (.67)	3.45 (5.98)	....	....	.86	2.32
3	41. (8.18)	-1.49 (-4.67)	.26 (4.12)	....	.013 (.75)	....	.063 (3.51)	....	.88	2.49
4	54. (17.55)	-1.72 (-4.75)	....	.11 (2.82)	.029 (1.58)	....	.093 (5.28)	....	.84	2.24
5	44. (7.69)	-1.30 (-4.29)	.21 (2.89)	....	-.0028 (-.15)	....	....	.00025 (3.35)	.87	2.33
6	55. (17.88)	-1.42 (-4.29)	....	.070 (1.80)	.0028 (.14)	....	....	.00035 (5.49)	.85	2.14

cause people to drop out of that category; the rate does have a significant negative impact on the other measures of income, also as predicted. This negative impact is made up for by the higher coefficients associated with EEO enforcement variables in the equations for all workers and all those with income. For all those with earnings, for example, a cumulated dollar spent by the EEOC leads to more than a 3% increase in the income ratio. In parallel fashion, every ten or twelve favorable court decisions may be interpreted as

associated with a 1% increase in the income ratio, as may every 3,000 actionable charges.

Examining the earnings of all workers in the context of equation 1, we note that changes in educational levels since Title VII went into effect have been associated with a two and a quarter percent increase in the income ratio (coefficient of .16 times increase in the education ratio of 14%), while EEOC expenditures would be associated with a rise of 12%, everything else being equal (of course, everything

else was not equal, since the unemployment rate almost doubled in the interim). EEO enforcement activities appear to have had substantial impact.

The results for nonwhite women, presented in Table 3, are similar to those for nonwhite men. The proportion of variance explained is slightly greater, and nonwhite female incomes, unlike male incomes, seem to be sensitive in some cases to court decisions calculated on an annual basis. These possibilities must be treated very cautiously, however, because the

Durbin-Watson *d* statistics are in some cases in the range where serial correlation in the errors cannot be ruled out with a high degree of probability. It is also worth noting that the median total income of nonwhite women does not seem to be responsive to changes in the unemployment rate.

The results for white women presented in Table 4 provide some fairly dramatic contrasts with the findings for nonwhite men and women, and indicate that the utility of the hypotheses being tested is lim-

Table 3. Determinants of Nonwhite Female Income As Percent of White Male Income, Alternative Specifications

Independent Variables—unstandardized regression coefficients (t-statistics in parentheses)										
EARNINGS OF YEAR-ROUND, FULL-TIME WORKERS										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	8.9 (.92)	.40 (.82)	.34 (3.35)	....	.037 (1.81)	2.26 (3.00)	....	....	.91	1.47
2	16. (2.72)	.28 (.66)	....	.28 (4.15)	.030 (1.60)	2.24 (3.37)	....	....	.93	1.52
3	3.9 (.38)	.55 (1.02)	.39 (3.75)	....	.047 (2.23)	....	.052 (2.28)	....	.90	1.48
4	14. (2.10)	.39 (.81)	....	.32 (4.47)	.040 (2.02)	....	.053 (2.59)	....	.92	1.51
5	5.5 (.52)	.77 (1.59)	.38 (3.20)	....	.035 (1.50)	....	....	.00019 (2.29)	.90	1.55
6	14. (2.06)	.65 (1.48)	....	.29 (3.75)	.029 (1.34)	....	....	.00018 (2.41)	.91	1.56
EARNINGS OF ALL WORKERS										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	-6.4 (-1.28)	-.57 (-2.03)	.42 (7.34)	....	.046 (2.88)	3.17 (6.19)	....	....	.96	1.73
2	15. (5.00)	-.79 (-2.36)	....	.21 (5.76)	.055 (3.04)	3.63 (6.24)	....	....	.95	1.38
3	-9.7 (-1.84)	-.57 (-1.81)	.46 (7.61)	....	.060 (3.61)	....	.084 (5.33)	....	.95	1.70
4	13. (4.16)	-.78 (-2.08)	....	.23 (5.85)	.074 (3.89)	....	.096 (5.22)	....	.93	1.39
5	-5.0 (-.97)	-.35 (-1.26)	.39 (6.47)	....	.036 (2.12)	....	....	.00033 (6.04)	.96	1.67
6	15. (4.98)	-.51 (-1.60)	....	.19 (5.06)	.043 (2.24)	....	....	.00038 (6.21)	.95	1.34
EARNINGS OF ALL WORKERS										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	-4.0 (-.91)	-.17 (-.65)	.31 (5.91)	....	.026 (1.82)	2.11 (4.57)	....	....	.93	1.66
2	11.0 (4.44)	-.32 (-1.11)	....	.15 (4.90)	.033 (2.12)	2.44 (4.92)	....	....	.92	1.52
3	-6.0 (-1.38)	-.16 (-.58)	.33 (6.32)	....	.035 (2.47)	....	.0056 (4.08)	....	.93	1.63
4	10.0 (3.87)	-.31 (-1.01)	....	.17 (5.12)	.045 (2.90)	....	.064 (4.25)	....	.91	1.50
5	-2.8 (-.63)	-.026 (-.11)	.28 (5.40)	....	.018 (1.25)	....	....	.00023 (4.85)	.94	1.66
6	11. (4.66)	-.14 (-.55)	....	.14 (4.44)	.023 (1.47)	....	....	.00026 (5.24)	.92	1.51

Table 4. Determinants of White Female Income As Percent of White Male Income, Alternative Specifications

Independent Variables—unstandardized regression coefficients (t-statistics in parentheses)										
EARNINGS OF YEAR-ROUND, FULL-TIME WORKERS										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	-15. (-2.28)	.35 (2.60)	.72 (10.90)	....	.0024 (.31)	-.53 (-2.42)	....	....	.93	1.89
2	110. (20.02)	-.15 (-.97)	....	-.56 (-9.45)	.025 (2.63)	-.097 (-.37)	....	....	.91	1.45
3	-17. (-2.60)	.39 (2.98)	.73 (11.69)	....	-.032 (-.05)	....	-.031 (-2.85)	....	.94	2.02
4	109. (20.79)	-.11 (-.70)	....	-.56 (-9.79)	.026 (2.97)	....	-.011 (-.83)	....	.91	1.42
5	-15. (-2.31)	.34 (2.86)	.71 (11.57)	....	.0021 (.33)	....	....	-.00011 (-3.07)	.94	2.01
6	109. (20.16)	-.13 (-.84)	....	-.55 (-9.40)	.026 (2.97)	....	....	.000037 (-.86)	.91	1.43
EARNINGS OF ALL WORKERS										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	-45. (-3.41)	.55 (1.53)	.89 (7.50)	....	-.0029 (-.19)	-.71 (-1.05)	....	....	.81	.33
2	115. (23.82)	-.13 (-.61)	....	-.74 (-13.26)	.031 (1.96)	-.041 (-.09)	....	....	.92	1.04
3	-46. (-3.52)	.60 (1.61)	.90 (7.63)	....	-.0069 (-.34)	....	-.040 (-1.14)	....	.81	.32
4	115. (24.2)	-.098 (-.44)	....	-.74 (-13.4)	-.034 (2.36)	....	-.0098 (-.44)	....	.92	1.02
5	-44. (-3.36)	.54 (1.52)	.89 (7.46)	....	-.0048 (-.22)	....	....	-.00013 (-1.11)	.81	.32
6	115. (23.69)	-.13 (-.58)	....	-.74 (-13.2)	.032 (2.16)	....	....	-.000016 (-.21)	.92	1.03
MEDIAN TOTAL INCOME										
Eq.	Constant	Unempl	Educ	Attitude	% Cases	EEOC \$	N Cases	Charges	R ²	D-W d
1	-66. (-4.16)	-.080 (-.18)	.96 (6.66)	....	-.0065 (-.22)	2.01 (2.45)	....	....	.70	.39
2	106 (15.46)	-.82 (-2.64)	....	-.80 (-10.04)	.030 (1.32)	2.73 (4.46)	....	....	.84	1.24
3	-62. (-3.85)	.13 (.28)	.93 (6.34)	....	.011 (.43)	....	.097 (2.23)	....	.69	.39
4	104. (14.25)	-.85 (-2.49)	....	-.76 (-9.04)	.053 (2.41)	....	.13 (3.79)	....	.81	1.16
5	-68. (-4.25)	-.0068 (-.016)	.98 (6.70)	....	.026 (.096)	....	....	.00034 (2.39)	.69	.38
6	106. (15.18)	-.73 (-2.37)	....	-.81 (-9.94)	.043 (1.97)	....	....	.00046 (4.29)	.83	1.18

ited unless they are specified better. As shown in Figures 1, 2, and 3, white female incomes have declined relative to those of white men despite increases in the incidence of attitudes favorable to female labor force participation on an equal basis; in addition, the decline continued, at least for a while, in the face of legislative change and increasing EEO enforcement efforts. These facts are reflected in the coefficients, which are negative for public attitudes in every equation, and are negative or insignificant for EEO enforcement efforts in some of the equations. It may be

possible, however, that the reversal of the downward trend in total money income has been due to EEO enforcement activity. The coefficients for education remain strong and positive, as in Tables 2 and 3. Because relative white female education has been going down, declining incomes could be attributed to changes in relative education. Such an interpretation seems far-fetched, however, if only because initial white female educational levels were higher than those for men, while income levels hardly were.

In addition to the unexpected coeffi-

cients, the measures of R^2 and the Durbin-Watson d statistic indicate that there is something wrong with the model as it applied to white women. R^2 is notably lower in the equation for white women than it is for other groups. More significantly, the d statistic indicates the likely presence of substantial serial correlation in the error terms; such a result is often interpreted as an indication that important variables have been left out of the equation.¹⁷ A statistical model that worked reasonably well for nonwhites does not appear nearly as useful for explaining changes in the relative incomes of white women.

DISCUSSION

As expected, the unemployment rate generally has had a significant impact on the incomes of nonwhites. In addition, EEO enforcement activities have had a significant impact on their incomes. Unfortunately, the extremely high correlations between changes in attitudes and educational levels made it impossible to estimate their impacts separately; at this point, it is impossible to say how much of the change in nonwhite income has been due to each. The situation with regard to various measures of EEO enforcement activity is similar. Since the mid-1960s, improvements in nonwhite education, changes in attitudes and the law, and EEO enforcement activity all seem to form a historical "package." This collection of closely related forces has led to the improvement of nonwhite incomes, but it is difficult at a number of points to be very clear about the causal relationships among the variables or to gauge independent impact very precisely. The passage of time, providing more data points, the development of better measures of educational quality and attitude change, and studies at lower levels of aggregation may lead to analyses with statistically neater outcomes.

¹⁷ Generalized least-squares estimation could be used to overcome much of the effect of serial correlation, but in this context that would miss the point, which is that a particular statistical model derived from prior theoretical and empirical work does not work well when applied to a comparison of groups not hitherto examined.

The major problem raised by the findings has been the difference between the results for white women and those predicted for all groups and actually estimated for nonwhites. What kind of story could one tell that would explain the results and improve the specification of the model?

A great deal has been written about the similarities and differences between race and sex discrimination (for a general review, see Chafe, 1977: chaps. 3-4). There is no objective way to conclude which kind of discrimination is "worse"—although if one's standard is equality of results, sex discrimination seems worse because white women have lower incomes than nonwhite men, and nonwhite women have the lowest of all—nor is it possible at this stage to specify rigorously the relative difficulties to be overcome or the resources available to the different groups. Nevertheless, there are a number of factors, some operating before the passage of the laws, some built into the operation of the laws, and some occurring as a consequence, which can be described as making sex discrimination more difficult to overcome than race discrimination.

Among preexisting factors are the following: There is some evidence that labor market discrimination against women is "worse" than discrimination against nonwhites, in that income differences by race have been attributed largely to higher black levels of unemployment and restricted access to many occupations, while women suffer from these problems and from lower wages within job categories (Strauss and Horvath, 1976). Women may have had more education than men, on the average, but the education may have been less useful as women shied away from the acquisition of practical skills due to restrictions on their labor force activity (Madden, 1978). Women may be less unified in their interests than blacks, because the gains of some women may be at the expense of white men whose wives will suffer as a consequence (Alexis, 1974). Finally, white women may find it more difficult than nonwhites to make the same gains relative to white men simply because there are so many more white women; the changes in social struc-

ture implied by equal opportunity for white women are much greater than those implied by equal opportunity for blacks (Stern et al., 1976).

Thus, there are a number of preexisting factors that would make it more difficult for women to achieve equality. There are compensating factors, of course. Greater numbers can lead to greater political strength, if unity can be achieved, for example (Alexis, 1974), and white women can have the relatively easy access of white men to informal socialization, useful contacts, etc., when attitudes change. The empirical problem will be determining the net effect of each.

The law itself as it applies to women also makes their situation more difficult than that of nonwhites. Although historically both blacks and women have been subject to many legal restrictions on their activities, blacks have suffered from fewer legal disabilities than women since the mid-1960s. The differences are both constitutional and statutory. The Supreme Court has interpreted the Constitution so as to make race a "suspect classification"—laws that distinguish between races are inherently suspect, and will be struck down unless justified by a compelling state interest. Distinctions between the sexes have not attained this status, so arguments against sex discrimination rest on a shakier constitutional foundation than arguments against race discrimination (see Ginsburg, 1976; Getman, 1973).

Two major statutory issues have probably slowed the positive impact of EEO legislation on women. First, the relationship between Title VII and state protective legislation which limited certain labor force activities of women was initially unclear. It is now clear that Title VII overrides such legislation, but female progress was probably slowed somewhat by the uncertainty (see Gates, 1976). Second, as noted above, women can still be treated unequally in those cases where sex is a "bona fide occupational qualification" for a job; race is never considered a bona fide occupational qualification. Although the EEOC and the courts have tended to interpret this provision narrowly, it still provides a loophole in the law.

Finally, response to the laws may differ between groups, and it is in considering differential response that probably the most immediately useful way of dealing with white women is to be found.

The important variable is probably the rate of labor force participation. During the 1948–1975 period, rates of labor force participation among white women have increased considerably, rising from 33.3% in 1954 to 37.5% in 1964 and 45.4% in 1975. Given that a high proportion of the new entrants would have had few skills and little experience, it would not be surprising if the average earnings of all labor force participants went down, and that is what happened. If the elasticity of the supply of white female labor were high, and women were optimistic about opportunities increasing as a result of changes in legislation, the size of the influx of white women into the labor force could have outpaced the increase in opportunities, and continued to bring median earnings down even after the passage of EEO legislation. This picture would be consistent with the differences in trends in earnings as opposed to total money income described above (see Figures 1 and 2). The entry of inexperienced white women into the labor force could bring down the median earnings of those who are working, but increase the median total incomes of all women, since the earnings of the new entrants would go from zero to some higher figure. And, in fact, total money incomes have risen noticeably since 1963–64, even while median earnings continued to decline.

The situation has been quite different for nonwhite men and women. The labor force participation rates of nonwhite men have actually declined in recent years (like white male rates), going from 85.2% in 1954 to 70.3% in 1975, with most of the decline concentrated among older men. The participation rate of nonwhite women has been very stable; it was 46.1% in 1954, 48.5% in 1964, and 48.7% in 1975. For nonwhite men and women, therefore, changes in income due to EEO legislation and changing attitudes would be easier to detect because they would not be confounded with changes caused by trends in labor force participation.

This discussion raises an additional question, however. In response to what could be seen as increasing economic opportunities brought about by changing attitudes and legislation, white women increased their labor force participation, nonwhite women did not change theirs, and nonwhite men actually withdrew from the labor force. That is, each of the three groups in question reacted differently to changing circumstances.

A plausible partial explanation for the behavior of white women might be that they were the group with the most to gain from increased labor force participation in the short term. Their initial rate was lowest, so could increase most easily, and the initial level of education was high enough to promise better jobs than would be available to many nonwhites, whose educational level was lower. With regard to nonwhite women, it might be that increased opportunities for nonwhite men led some nonwhite women to drop out of the labor force, partly compensating for the arrival of new entrants. And, with lower educational levels to start with, new nonwhite entrants might have had less to gain than whites.

The model tested above fails when confronted with a group whose labor supply seems to be the most elastic of all groups considered, whose level of formal education was high, but whose labor force experience and practical training was low. It seems reasonable to hypothesize that the initial model and hypotheses about the impact of attitude change and EEO legislation would be supported by the evidence for all groups if the model were revised to include measures of labor force experience and actual skill levels. Alternatively, the model tested above should be supported once all other groups reach equilibrium levels of relative labor force participation and skills.

CONCLUSIONS

This paper has argued for the inclusion of changes in attitudes in the study of changes in the economic situation of women and nonwhites, for realism in the examination of laws' impact, and for comparing the economic status of all

groups protected by EEO legislation with white men, who are the criterion group in the legislation. The findings for nonwhites generally provide evidence consistent with the revised model, although it was impossible to test some hypotheses about the independent impact of variables because of multicollinearity. The model breaks down noticeably, however, when white women are considered, leading to the conclusion that it was improperly specified and should be revised to take labor force participation rates, work experience, and skill levels into account.

Although nonwhite men and women have made major gains relative to white men in recent years, and white women show some signs of reversing a downward trend, the income gaps between groups are still very large. The gains thus far may have been the easy ones, involving the elimination of especially crude and blatant forms of discrimination. As discrimination becomes more subtle, as structural discrimination becomes a more important part of total discrimination, and as the legal system is confronted more and more often with conflicts between fundamental values—such as nondiscrimination and affirmative action—further gains may become more difficult to achieve.¹⁸

APPENDIX

DATA SOURCES AND VARIABLE DEFINITION

Income. Median wage or salary income of year-round, full-time workers 14 years old or over, by race and sex: U.S. Bureau of the Census, 1976: 459; U.S. Bureau of the Census, *Current Population Reports*, 1977: Ser. P-60, No. 105. Median wage or salary income of person 14 years old and over: U.S. Bureau of the Census, *Current Population Reports*, 1970-77: Ser. P-60, Nos. 69, 75, 80, 85, 90, 97, 101, 105. Median total money income: U.S. Bureau of the Census, *Current Population Reports*, 1977: No. 105.

Unemployment. U.S. Bureau of the Census, 1977: 379. Size of labor force: U.S. Department of Labor, 1975:31-4; 1977:25-8.

Implicit price deflator. U.S. Bureau of the Census, 1976:379.

Education. Median years of school completed, by race and sex: for 1947, 1950, 1960, U.S. Bureau of

¹⁸ The most sophisticated and comprehensive analysis linking legal and sociological aspects of employment discrimination is that of Fiss (1971); an analysis of the problems in the context of recent court cases is found in Venick and Lane (1977).

the Census, 1975:380-1; 1952, U. S. Department of Labor, 1974: 299-301; 1957, U.S. Bureau of the Census, *Current Population Reports*, 1958: Ser. P-20, No. 77; 1958, 1961, U.S. Bureau of the Census, *Current Population Reports*, 1960-61: Ser. P-60, Nos. 33, 39; 1959, 1962, 1964-1975, U.S. Department of Labor, 1978:247-9. Cf. Freeman, 1973. Other years interpolated.

Attitudes. Initial data points: "Do you think Negroes should have as good a chance as white people to get any kind of job, or do you think white people should have the first chance at any kind of job?" Sources: May 1944, NORC Survey 225; May 1946, NORC Survey 241; April 1947, NORC Survey 150; December 1963, NORC Survey 330; June 1966, SRS Survey 889A; March 1972, NORC Survey 9001 (Hastings and Southwick, 1974); Schwartz, 1967:133.

"Do you approve of paying women the same salaries as men, if they are doing the same work?" Sources: January 1942, AIPO Survey 259; September 1945, AIPO Survey 356; April 1946, RFOR Survey 54; April 1954, AIPO Survey 530; June 1962, AIPO Survey 660 (Hastings and Southwick, 1974).

"Do you approve of a married woman earning money in business or industry if she has a husband capable of supporting her?" Sources: October 1938, AIPO Survey 136; October 1945, AIPO Survey 359; June 1970, AIPO Survey 808; March 1972, NORC Survey 9001; March 1976, *Gallup Opinion Index* 128 (Hastings and Southwick, 1974; Gallup Opinion Index, 1976).

The responses were regressed on time and ordinary least squares estimates for each year used. Figure 3 presents the estimates. Maximum value permitted was 95%. Cf. Burstein and Freudenburg, 1978.

Equal Employment Opportunity Commission. Annual appropriations: Equal Employment Opportunity Commission, 1976:31-2. Charges: EEOC annual reports, 1967-1976; reports 8 and 9 (fiscal years 1973 and 1974) use a different reporting system than the other reports, so charges were estimated by interpolation.

Equal Pay Act underpayments disclosed. U.S. Department of Labor, 1975:424;1977:318.

Court cases. Decisions reported in Bureau of National Affairs (1969-77) for U.S. Courts of Appeals and U.S. Supreme Court coded on annual basis; cases interpreting the four laws and dealing with race or sex discrimination only; cases in which all nontrivial points of law won by women or minorities coded 1, cases in which all nontrivial points lost coded 0, mixed results coded ½, in counting victories. The small number of reverse discrimination cases won by white men excluded from calculations. Detailed coding rules available from author.

Furstenberg, A. Horowitz, and B. Harrison (eds.), *Patterns of Racial Discrimination*. Lexington: Heath.

Arrow, Kenneth

1972 "Models of job discrimination." Pp. 83-102 in A. Pascal (ed.), *Racial Discrimination in Economic Life*. Lexington: Lexington Books.

Becker, Gary

1971 *The Economics of Discrimination*. 2nd ed. Chicago: University of Chicago Press.

Bell, Derrick, Jr.

1977 "Forward: equal employment law and the continuing need for self-help." *Loyola University of Chicago Law Journal* 8:681-6.

Bell, Duran

1972 "Occupational discrimination as a source of income differences: lessons of the 1960s." *American Economic Review* 62:363-72.

1974 "The economic basis of employee discrimination." Pp. 121-35 in G. von Furstenberg, A. Horowitz, and B. Harrison (eds.), *Patterns of Racial Discrimination*. Lexington: Heath.

Beller, Andrea

1977 "The effect of women's earnings on enforcement in Title VII cases." *Monthly Labor Review* 100:56-7.

Berger, Morroe

1967 *Equality by Statute*. Rev. ed. New York: Doubleday.

Bergmann, Barbara and Jerolyn Lyle

1971 "The occupational standing of Negroes by areas and industries." *Journal of Human Resources* 6:411-33.

Berk, Richard and Marilyn Brewer

1977 "Feet of clay in hobnail boots: an assessment of statistical inference in applied research." Paper presented to the annual meeting of the American Sociological Association, Chicago.

Blau, Francine, and Carol Jusenius

1976 "Economists' approaches to sex segregation in the labor market." *Signs* 1:181-99.

Bureau of National Affairs

1969- Fair Employment Practice Cases. Vols. 1-15. Washington, D.C.: BNA.

Burstein, Paul

Forth- "Public opinion, demonstrations and the coming passage of antidiscrimination legislation." *Public Opinion Quarterly*.

Burstein, Paul and William Freudenburg

1978 "Changing public policy: the impact of public opinion, anti-war demonstrations, and war costs on Senate voting on Vietnam war motions." *American Journal of Sociology* 84:99-122.

Chafe, William

1977 *Women and Equality*. New York: Oxford University Press.

Equal Employment Opportunity Commission

1966- Annual Report. Washington, D.C.: U.S. Government Printing Office.

Farley, Reynolds

1977 "Trends in racial inequalities: have the gains of the 1960s disappeared in the

REFERENCES

Adams, Arvil

1972 *Toward Fair Employment and the EEOC*. Washington, D.C.: Equal Employment Opportunity Commission.

Alexis, Marcus

1974 "The political economy of labor-market discrimination." Pp. 63-83 in G. von

- 1970s?" *American Sociological Review* 42:189-208.
- Featherman, David and Robert Hauser
1976 "Sexual inequalities and socioeconomic achievement in the U.S., 1962-1973." *American Sociological Review* 41:462-83.
- Federal Reporter
1971 2nd Ser. St. Paul: West.
- Fiss, Owen
1971 "A theory of fair employment laws." *University of Chicago Law Review* 38:235-314.
- Freeman, Richard
1973 "Changes in the labor market for black Americans, 1948-72." *Brookings Papers on Economic Activity* 1:67-120.
- Gallup Opinion Index
1976 Princeton.
- Gates, Margaret
1976 "Occupational segregation and the law." *Signs* 1:61-74.
- Getman, Julius
1973 "The emerging constitutional principle of sexual equality." Pp. 157-80 in P. Kurland (ed.), *The Supreme Court Review* 1972. Chicago: University of Chicago Press.
- Ginsburg, Ruth
1976 "Gender in the supreme court: the 1973 and 1974 terms." Pp. 1-24 in P. Kurland (ed.), *The Supreme Court Review* 1975. Chicago: University of Chicago Press.
- Gitt, Cynthia and Marjorie Gelb
1977 "Beyond the equal pay act: expanding wage differential protections under Title VII." *Loyola University of Chicago Law Journal* 8:723-66.
- Gunderson, Morley
1975 "Male-female wage differentials and the impact of equal pay legislation." *Review of Economics and Statistics* 57:462-9.
- Gwartney, James and Richard Stroup
1973 "Measurement of employment discrimination according to sex." *Southern Economic Journal* 39:575-87.
- Harvard Law Review
1971 "Developments in the law: employment discrimination and Title VII of the Civil Rights Act of 1964." *Harvard Law Review* 84:1109-316.
- Hastings, Philip and Jessie Southwick
1974 *Survey Data for Trend Analysis*. Williamstown: Roper Opinion Research Center.
- Haworth, Joan, James Gwartney and Charles Haworth
1975 "Earnings, productivity, and changes in employment discrimination during the 1960s." *American Economic Review* 65:158-68.
- Heckman, James and Kenneth Wolpin
1976 "Does the contract compliance program work?" *Industrial and Labor Relations Review* 29:544-64.
- Hill, Herbert
1977 *Black labor and the American legal system. Race, Work, and the Law. Vol. 1*. Washington, D.C.: BNA.
- Landes, William
1968 "The economics of fair employment laws." *Journal of Political Economy* 76:507-52.
- Levine, Marvin and Anthony Montcalmo
1971 "The equal employment opportunity commission: progress, problems, prospects." *Labor Law Journal* 22:771-9.
- Levitan, Sar, William Johnston and Robert Taggart
1975 *Still a Dream: The Changing Status of Blacks Since 1960*. Cambridge, Ma.: Harvard University Press.
- McCrone, Donald and Richard Hardy
1978 "Civil rights policies and the achievement of racial economic equality, 1948-1975." *American Journal of Political Science* 22:1-17.
- Madden, Janice
1978 "Economic rationale for sex differences in education." *Southern Economic Journal* 44:778-97.
- Marshall, Ray
1974 "The economics of racial discrimination: a survey." *Journal of Economic Literature* 12:849-71.
- Masters, Stanley
1975 *Black-White Income Differentials*. New York: Academic Press.
- Niemi, Albert, Jr.
1974 "The impact of recent civil rights laws." *American Journal of Economics and Sociology* 33:137-44.
- Pfister, Richard
1974 "Comments on Vroman's 'changes in black workers' relative earnings.'" Pp. 189-90 in George von Furstenberg, Ann Horowitz, and Bennett Harrison (eds.), *Patterns of Racial Discrimination, Vol. 2*. Lexington: Lexington Books.
- Rao, Potluri and Roger Miller
1971 *Applied Econometrics*. Belmont: Wadsworth.
- Schwartz, Mildred
1967 *Trends in White Attitudes Toward Negroes*. Chicago: National Opinion Research Center.
- Smith, James and Finis Welch
1977 "Black-white male wage ratios: 1960-70." *American Economic Review* 67:323-38.
- Snyder, David and Paula Hudis
1976 "Occupational income and the effects of minority competition and segregation." *American Sociological Review* 41:209-34.
- Stern, Robert, Walter Gove and Omer Galle
1976 "Equality for blacks and women: an essay on relative progress." *Social Science Quarterly* 56:664-72.
- Stevenson, Mary
1975 "Relative wages and sex segregation by occupation." Pp. 175-200 in Cynthia Lloyd (ed.), *Sex, Discrimination, and the Division of Labor*. New York: Columbia University Press.
- Strauss, Robert and Francis Horvath
1976 "Wage rate differences by race and sex in the U.S. labour market: 1960-1970." *Economica* 43:287-98.

- Task Force on Women and Employment of the Twentieth Century Fund
 1975 *Exploitation from Nine to Five*. Lexington: Lexington Books.
- U.S. Bureau of the Census
 1958 *Current Population Reports*. Ser. P-20. Washington, D.C.: U.S. Government Printing Office.
 1960- *Current population reports*. Ser. P-60. Washington, D.C.: U.S. Government Printing Office.
 1977 *Social Indicators 1976*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Commission on Civil Rights
 1977 *The Federal Civil Rights Enforcement Effort, 1977*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Labor
 1974 *Manpower Report of the President*. Washington, D.C.: U.S. Government Printing Office.
 1977 *Handbook of Labor Statistics*. Washington, D.C.: U.S. Government Printing Office.
 1978 *Employment and Training Report of the President*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Office of Management and Budget
 1978 *Special Analyses, Budget of the United States Government, Fiscal Year 1979*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Reports
 1971 Washington, D.C.: U.S. Government Printing Office.
- U.S. Senate. Committee on Appropriations
 1970 *Hearings on State, Justice . . . Appropriations*. 91st Congress, 2nd session. Washington, D.C.: U.S. Government Printing Office.
- U.S. Statutes At-Large
 1963- Washington, D.C.: U.S. Government Printing Office.
 1972 Office.
- Venick, Shelley and Ronald Lane
 1977 "Doubling the price of past discrimination." *Loyola University of Chicago Law Journal* 8:789-812.
- Villemez, Wayne and Alan Rowe
 1975 "Black economic gains in the sixties: a methodological critique and assessment." *Social Forces* 54:181-93.
- Vroman, Wayne
 1974 "Changes in black workers' relative earnings: evidence from the 1960s." Pp. 167-96 in George von Furstenberg, Ann Horowitz, and Bennett Harrison (eds.), *Patterns of Racial Discrimination*, Vol. 2. Lexington: Heath.
- Welch, Finis
 1973 "Education and racial discrimination." Pp. 43-81 in Orley Ashenfelter and Albert Rees (eds.), *Discrimination in Labor Markets*. Princeton: Princeton University Press.
- Wilson, William
 1978 *The Declining Significance of Race*. Chicago: University of Chicago Press.

ERRATA

The Items column in the February 1979 issue of the *REVIEW* (Vol. 44: p. 183) incorrectly identified the professional affiliations of J. Allen Whitt (*Towards a Class-Dialectical Model of Power*). Whitt holds a joint appointment in the Urban Studies Program and in the Department of Sociology at Brown University.

The final sentence of Robinson and Kelley's article, "Class As Conceived by Marx and Dahrendorf" (ASR February, 1979), contained an error. The correct version is: "For this reason we have taken this first step toward a merger of the class and status traditions."

THE VARIABILITY OF PARADIGMS IN THE PRODUCTION OF CULTURE: A COMPARISON OF THE ARTS AND SCIENCES*

REMI CLIGNET

Northwestern University

American Sociological Review 1979, Vol. 44 (June):392-409

While artistic and scientific endeavors take place in the context of collective actions, the structures and the functions of these actions are highly variable. The purpose of this paper is to show that the cohesiveness and permeability of culture producing communities differ *between* artistic and scientific fields as well as *across* the specific disciplines constitutive of each field, and that these contrasts are not stable over time. Correspondingly, the same variability characterizes the role played by paradigms in the definition of creative norms, in the rhetorics that professionals use to justify these norms, in the socialization of new practitioners and in the occurrence of scientific or esthetic revolutions.

Whether in the arts or the sciences individual creativity is embedded in the context of collective actions (Albrecht, 1968; Becker, 1974; Merton, 1973). This paradox results from the risks associated with the very publication of cultural works (Meyer, 1967). When artists and scientists innovate and depart from established conventions, they run the risk of being suspected of falsifying the documents offered to public scrutiny or of endangering the physical, emotional, and moral well-being of the society at large or of the professional communities to which they belong.¹

The purpose of the present paper is to identify the common and specific properties of the social processes regulating these risks. At first glance, the organizational patterns of artistic and scientific activities should be distinctive. The distinction between the unity of Truth and

the plurality of Beauty induces sociologists to use the singular form to label the study of science but the plural to label the study of the arts (sociology of science vs. sociology of the arts). Correspondingly, there should be differences *between* the social processes regulating the risks inherent in scientific and artistic endeavors.

Yet such differences are historically contingent. The accentuated division of labor which goes with urbanization and industrialization leads to a parallel segmentation of the relations that human beings establish with Nature and with their fellow human beings. This segmentation also fosters an internal differentiation of scientific and esthetic fields. Increased divergences in the definitions of biology and physics parallel increased divergences in the definitions of musical and literary worlds. As social arrangements become more complex, the word *discipline* ceases to refer exclusively to a diffuse form of social control, but evokes boundaries between specific arts or between specific sciences. In short, contrasts between the arts and the sciences do not preclude the possibility of contrasts *within* such fields.

On the other hand, culture producing communities are only subparts of the social system in which they are embedded. As such, they experience similar constraints in their attempts to control the raw materials needed for performing the relevant activities or to control the market places where individual works are

* Address all communications to: Remi Clignet; Department of Sociology; Northwestern University; Evanston, IL 60201.

I want to express my gratitude to Marshall Shumsky, Sam Gilmore, Karen Ribler, Andrew Weiss and Joe Valadez for their comments, but above all to Alvin Gouldner for his encouragements and his wisdom.

¹ The charges of heresy against Galileo or of obscenity against Stravinsky's *Rites of Spring* strongly suggest that creativity is often considered as a social problem. However professional communities do not only protect innovators against the negative social reactions generated by their work, but they also seek to prevent them from being discouraged by the apparent and/or temporary sterility of their investments.

presented to the public. These common constraints should limit the extent of differences between, as well as within, the organizational patterns of artistic and scientific communities.

In summary, the interplay of internal and external forces makes equally plausible the possibility of divergences and convergences in the organizational structures of specific disciplines in the arts and the sciences. Correspondingly, comparisons between these two fields require appropriate functional and historical controls. Overall parallels or contrasts between cultural worlds should not mask their internal variability, nor should they be viewed in a temporal vacuum. Similarities and dissimilarities between specific esthetic or scientific disciplines cannot be constant since their respective profiles have a history which is itself dependent upon the history of larger societies.

The Notion of Paradigm in the Arts and the Sciences

The first step of the analysis consists in evaluating the possibility of applying the notion of *paradigm* to the various art worlds, since this notion initially has been used solely to describe the universe of scientists. Basically, the term refers to two qualities shared by few works. These works represent a sufficiently unprecedented achievement to attract a group of practitioners away from competing modes of scientific activity, but they also remain sufficiently open to leave all sorts of problems for the redefined group of practitioners to solve (Kuhn, 1970:10).

Popular stereotypes suggest substantial differences between such a world and the organization of artistic activities. They stress the marginality of artists who are entitled to behave like Robinson Crusoe in their enterprises and whose achievements do not require their participation in "invisible colleges" (Ziman, 1968:10). Yet, even at the peak of the individualistic ideology which accompanied Romanticism, Baudelaire complained that the "present state of painting is the result of an anarchic freedom which glorifies the individual, however feeble he may be, at the ex-

pense of schools which are nothing but the organization of inventive forces" (Pelles, 1963:96). About the same time, Constable also argued that "painting is a science in which canvases are the experiments" (Pelles, 1963). Thus, artists themselves suggest that their activities, too, are negotiated in the context of institutional and of informal arrangements. But are the paradigms underlying sciences and the arts serving similar functions and are the corresponding parallels constant over time?

Because the functions performed by paradigms depend upon their structures, the next step consists in evaluating how technological innovations and changes in the relevant markets introduce new modes of differentiation both between and within artistic and scientific worlds. These external forces alter the membership of creative communities, their modes of division of labor, and hence the relations of cooperation and competition among individual practitioners. Thus, the structures of distinctive artistic and scientific disciplines may have varying levels of cohesiveness and permeability.

Yet, the notion of paradigm remains multifaceted (Masterman, 1970). To the extent that it represents a common definition of achievement, it is a political institution whose function is to identify individuals whose works meet the appropriate standards and to regulate their professional lives. At the same time, this identification rests upon a normative definition of the tasks to be accomplished and of the techniques to be used to that effect. Thus, the word *paradigm* carries distinctive connotations such as "changing boundaries between truths and errors," "successful metaphysical speculations," "models," "analogies," etc., but also "standard illustrations," "accepted devices," and finally "normal activity." The last step of our analysis consists therefore of showing how the differential structures of creative communities are associated with parallel contrasts in: (a) the common assumptions underlying the definition of the tasks to be accomplished, of the techniques to be used and of the publication of the work so produced; (b) the allocation of rewards to practitioners; (c) the modes of

socialization of new members; and (d) the boundaries between normal and revolutionary practices. To examine the various facets of the notion of paradigm should indeed help to distinguish normal sciences or arts from scientific or esthetic revolutions.

A Comparative View of the Structures of Artistic and Scientific Paradigms

The internal cohesiveness of paradigms depends upon the technology used to *produce* and *publish* cultural works. As long as the technology of production retained a low level of complexity, major boundaries separated craftsmen from scholars rather than artists from scientists. In Europe, the world of craftsmen initially was characterized by a marked division of labor and a corresponding hierarchy of occupational roles; but contemporary scholarly communities shared an individualistic ideology and an intellectualistic disdain for the irrationality of manual work.

In contrast to sculpture which [was] only a *craft*, because it must be learned from a teacher and involves physical fatigue, painting [was] an *art*, since it require[d] a knowledge of theory and of all the noble sciences that can be mastered without a teacher. (Paggi as quoted by Wittkover and Wittkover, 1968:11)

At the same time, artists and scientists were equally devoted to the identification of the "diagonals" crossing the mineral, vegetal, animal and cosmic orders (Caillois, 1960). Thus, Leonardo was only one of the many scholars to pass freely back and forth between artistic and scientific enterprises; the study of anatomy equally attracted painters and medical doctors (Kuhn, 1970:161; De Santillana, 1959:39-45).

Increased innovations in the technology of scientific and artistic production have marked the end of the premium attached to scholarly versatility (Kubler, 1962). Gone are the days when Jefferson could successfully dabble in architecture and in scientific ventures. Further, these innovations have had diverging effects on the sciences and the arts. Technological innovation has been uniformly conducive to a

spatial concentration of scientific communities and to a growing segregation of amateurs and professionals. The production of science has invariably moved into capital-intensive, large-scale organizations. Yet, this move did not simultaneously affect all scientific disciplines; physics has evolved before biology in this regard.

In contrast, the effects of such innovations on the arts have been more *diversified*. The invention of paint tubes has facilitated a dispersion of artists, a lowering in their modes of division of labor, a blurring of the distinction between apprentices and masters or between amateurs and professionals and a broadening of the objects deemed to be esthetically valid.

In music, the mass production of musical instruments has made it possible to enhance the variability of the syntactic properties of differing genres and more specifically, the range of interactions between the number and the autonomy of the organizational patterns (the frequency of the sounds used, the pitches, the rhythms, etc.) used by composers (Attali, 1977; Hennion and Vignolle, 1975; Loesser, 1954). This variability has accentuated tensions between the various categories of actors present in the musical scene. Thus, after the beginning of the nineteenth century, the performance of a score became as much an opportunity for musicians to display their own skills as to remain the modest servants of composers (Sennett, 1977).

Finally, changes in cinematographic technology have been associated with a parallel concentration of the corresponding paradigms. The formation of the first stylistically unified paradigms such as expressionism or neorealism has occurred first in countries such as Germany and Italy where the effects of increasingly rationalized means of cinematographic production were amplified by a favorable political ideology (Huaco, 1965:18-22). The subsequent systematization of these paradigms is evident in the increased number of explicit references that a director makes to plots or techniques used by illustrious predecessors. *We Loved Each Other So Much*, the film of Scola,

includes a double narrative, one concerned with a specific plot, the other with the history of the cinema in Italy.²

Alternatively, innovations in the technology of communication have uniformly modified the forms taken by the internal cohesiveness of culture producing communities. Because the mass reproduction of visual or acoustic statements has lowered the need of face-to-face contacts among practitioners, their communities have been increasingly based upon the sharing of common values rather than on the sharing of the same space. Secondly, these innovations have enlarged the problems treated by the members of each cultural discipline through a refinement of the evidences deemed to be socially acceptable (Ivins, 1969:160-3). Last, they have modified internal patterns of division of labor and hence the relations of cooperation and competition among individual practitioners.

However, the effects of these innovations on various disciplines are not necessarily simultaneous. Revolutions in the techniques of lithography and engraving and later of photography may have produced more differentiated images of reality; yet, in order to be used such images had to be consistent with the assumptions of each field. As an example, the testing of Einstein's theories on relativity by photographic evidences obtained during the solar eclipse of 1919 required first the community of physicists to assess the validity of the data created and hence to create theories to deal adequately with the methodological problems raised by their use (Moyers, forthcoming).

The same holds true of the visual arts. Change in the techniques of engraving have modified the boundaries between arts and crafts.³ Certain derivations of

these techniques aimed at improving the *reproduction* of esthetic artifacts, others at the *creation* of new esthetic objects (Ivins, 1969: chap. 4). The consequences of the invention of photography have been analogous. Liberating painters from the obligation of making portraits, a genre which was deemed to be minor, photography has enabled artists to explore new esthetic problems, at the risk of making the definition of their public more problematic (Ivins, 1969; Freund, 1974; Renoir, 1960). At the same time, the definition of photography itself also has been increasingly differentiated: it has become both a documentary technique and an autonomous art form (Rosenblum, 1978; Sonntag, 1977).

Although the introduction of mass reproduced recordings has occurred later, its effect on musical communities has been analogous. Performers are no longer obliged to share a common knowledge of musical notations and to undergo the same type of musical training. In this sense they are able to form autonomous musical communities (Bennett, 1972). Further, their communities are increasingly specialized. Some of them are exclusively turned toward recording activities, others remain in direct contact with the public. At the same time, this innovation also has accentuated competition among artists through a systematic refinement of the social definition of ideal sounds (Drees-Ruttencutter, 1977; Sennett, 1977).

The permeability of artistic and scientific communities to external influences varies with the complexity of the patterns of social stratification operating in the society at large. Up to the seventeenth century the subordination of artists and scientists to their clients minimized the distinction between pure and applied forms of the corresponding forms of activity. Thus during his life time, Kepler owed his fame as much to his endeavors as an astrologer as to his astronomical computations (Bronowski, 1956:15). In painting, patrons influenced the definition of the scenes to be depicted, of the colors

² For a full description see Seitz (1977-1978) and Copeland (1977). More generally, modern artists finding themselves with no shared tradition, tend to build on older works of art.

³ To state that "academic art" marks the turning of art into craft (Becker, 1978:878) is to fall prey to an error of paralogics. The value judgments passed in this regard by the "creators" of a particular society or period, by their contemporaries and by the posterity are based upon distinctive criteria. Further, the external and internal forces that lead a work to be

shifted from the category *art* into the category *craft* or vice versa differ both across times and across disciplines.

to be used and of the size of the canvases. Salvator Rosa (1615–1673) was one of the first painters to assert that he was “painting for his own satisfaction and pleasure rather than to please his clients” but to be disappointed by the discordances between his own evaluation of his canvases and the tastes of his buyers (Haskell, 1963:23).

Changes in the modes of division of labor at work, in the society at large and in the corresponding patterns of social stratification, have enabled artists and scientists to increase their social autonomy through the institutionalization of academies (Pevsner, 1940). Initially, however, the effectiveness of these efforts varied across societies. Differences between the relative centralization of French and British political and economic structures during the seventeenth and eighteenth centuries were associated with parallel contrasts in the nature of local academies, in the social background of local artists and scientists, in the interindividual variability of the definitions of tasks to be accomplished and in the stratification at work in the creative professions (Shapin and Thackeray, 1974; Pelles, 1963; White and White, 1965). In short, the extent of initial cultural variations in the insulation of creative communities reveals the importance of the influence exerted by external factors on their functioning.

With the later systematic development of industrial organizations and urban centers, the growing segmentation of social groups, and the corresponding decline of “public life” have uniformly enlarged the social distance separating scientific and artistic communities from one another and from their respective followers (Grana, 1964). Yet the effects of this increased insulation have differed between the two fields. The continuous concern of industrial societies about progress, and the corresponding fusion of science and technology have enhanced the autonomy of scientific social systems (Lammers, 1974:126). Since the nineteenth century, laymen are said to stand in awe of scientists because they do not understand their work, but to despise artists for the same reasons. Unduly modest in the first case, the “philistine” is unduly conceited in the second

one (Kuhn, 1969:406; Getzels and Csikszentmihalyi, 1976; Sennett, 1977).⁴

Such contrasts *between* the arts and the sciences should not mask the processes of differentiation that have taken place *within* the two fields. First, both of them are subjected to the tensions resulting from the distinction between *pure* and *applied*. The participation of scientists in applied ventures has been and still is considered to be sufficiently debasing to jeopardize their status in their scientific community of origin (Kevles, 1977). The same tensions characterize the arts and particularly those which involve several media. Even though the famous conductor Ansermet asked the dancer Margot Fonteyn whether she approved the pace he had adopted, the fact remains that a successful young conductor recently left the Royal English Ballet because it was too risky for his career as a conductor (Rockwell, 1976).

In addition, culture producing fields tend to be similarly differentiated in terms of the participation of the public in the definition of the problems to be treated. Lay images play a more significant role in the origin, the elaboration, and the diffusion of key concepts in the social than in the natural sciences (Hudson, 1972; Lammers, 1974:136–40). The same holds true in the case of the scientific disciplines involved in the study of environmental impacts as compared with those directly concerned with the production of new materials (Schnaiberg, 1977). As a result, both social and “impact” sciences encounter more criticisms and are more vulnerable to external pressures. In the same way, variations in the mechanisms by which movie makers, musicians and painters establish contacts with their audiences are associated with concomitant contrasts in the social importance attached to the “veridicality of their statements” (Becker and Walton, 1976).

Thus at one end of the continuum, pressures toward “veridicality” remain high

⁴ As suggested by Sennett, the philistine may entertain some doubt about the validity of his skepticism whose intensity and assertiveness vary across esthetic fields.

in the case of the cinema and of music. Because of the amorphous nature of cinematographic audiences, veridicality requires cinematographic statements and symbols to be plausible and hence held acceptable by various social groups.⁵ Similarly, in music, veridicality implies familiarity and hence the desire of performers and audiences alike to *recognize* the statements which are to be played. The organizational constraints experienced by orchestras as a result of the homogeneity of their past-oriented audiences force conductors either to retain a conservative repertoire or to look for new audiences⁶ (Zolberg, n.d.). It is only in the case of the visual arts at the other end of the continuum, that pressures toward veridicality are both lower and more diversified. The democratization of means of pictorial production, the loss of the monopoly initially enjoyed by academies on the sale of canvases and the development of private galleries have facilitated an early segmentation of paradigms. This segmentation has been accentuated, later on, under the combined influence of two additional forces. In ideological terms, the notion of veridicality has been undermined by the partial legitimation of the concept of the *avant garde*⁷ (Poggioli, 1971; Baudrillard, 1972). In material

terms, the same notion also has been undermined by the faster turnover of canvases in art markets and by the progressive erosion of the differential acquisition policies adopted by private collectors or galleries as opposed to public museums.⁸ Indeed both public and private sectors have become evenly sensitive to the charges of serving the interests of esthetic forms deemed to be obsolescent.

In summary, changes in technology and in market structures have been associated with a progressive differentiation of communities both *between* and *within* cultural worlds. Contrasts in the internal cohesiveness or the permeability of specific disciplines induce parallel variations in the tensions between the behaviors of cooperation and competition adopted by the relevant types of practitioners.⁹ At one end of the continuum, both the low patterns of division of labor of certain of these disciplines and the accentuated segmentation of their audiences facilitate the coexistence of distinctive paradigms. In fact, common sense acknowledges the ideological nature of the commitment attached to such paradigms by using the suffix *ism* in their definition. The functionalism, Marxism or symbolic interactionism of sociology or the behaviorism of psychology correspond to the pointillism, fauvism, or tachism of painting or to the naturalism, symbolism or surrealism of literature. In the middle of the continuum, music is characterized by the coexistence of several independent paradigms (tonal and atonal music) within which practitioners adhere to a set of more rigid rules. At the opposite end of the continuum, physical scientists solve the tensions between their faith in a past-oriented orthodoxy and their commitment to a future-oriented "revolution," by shifting their profes-

⁵ In the cinema as in other mass media, statements exploring individual psychological traits are suspect whenever such traits can be imputed to an easily identifiable category of the population. The reactions of certain critics to *Nightporter*, the film of Cavani, offer a case in point. In spite of the explicit statements made by the director, her exploration of a pathological relation between one aggressor and his victim was deemed to be a generalized portrait of the behaviors and feelings of the entire population of former concentration camp inmates (Cavani, 1974).

⁶ Given the fact that live composers are confronted with dead audiences (see Mayer, 1975), a number of contemporary musicians seek to attract a new type of audience. Shapey offers to critics the scores of the pieces he is going to perform. Boulez and Poliakoff allow their audiences to wander from room to room or to sprawl on comfortable rugs.

⁷ Indeed this legitimation is only partial. This means that there are significant contrasts in the importance that distinctive groups of patrons attach to the "veridicality" of a pictorial statement. As a matter of fact, an innovation in the arts does not mean that preceding works are disregarded (Ackerman, 1969: 372).

⁸ The erosion of such differences is partly due to the spectacular rises in the merchant value of old paintings which have driven out museums from the relevant markets (Reitlinger, 1961:70).

⁹ If the production of culture depends upon relations of cooperation, both this production and its evaluation also depend upon the application of specific norms by significant others to each work and its author. In this sense, culture producing worlds are dominated by power relations (Griffin and Griffin, 1976:175-6).

sional allegiance rather than by changing the labels used to describe their activity (Leighninger, 1976).

Variations in the relative dominance of one single paradigm in distinctive artistic or scientific disciplines are associated with parallel contrasts not only in the membership of the corresponding communities but also in the nature of their norms and in the actual behaviors of individual practitioners.

A Comparative View of Artistic and Scientific Paradigms As Shared Values

Cultural endeavors rest upon a common metaphysical belief in the possibility to overcome the accidental. Yet, there are variations in the basic underlying assumptions. Scientists tend to aim at interpreting events in terms of the most consistent generalizations. Artists search for symbols which translate most effectively the nature and functions of things into individual experiences (Arnheim, 1966:18-37; Barzun, 1974:25). Correspondingly, there should be contrasts both in the norms of the two fields and in the rhetorical styles used in the publication of individual works. However, such contrasts are historically relative and tend to be as significant within as between such fields.

(1) *A comparison of artistic and scientific norms.* The notion of paradigm presupposes conformity to a set of norms regulating the conditions under which individual contributions should enhance the collective capital of knowledge. The significance of these contributions is *uniformly* a function of the validity imputed to underlying theories and methodologies. In science, the evaluation of new theories in astronomy has successively required the acceptance of the evidences produced by the use of telescopes and photography (Feyerabend, 1975). Similarly the validity attached to esthetic substance is not independent of the validity attached to style. Changes in the objects deemed to be worth painting (landscapes, portraits, etc.) and in the methodological rules underlying their translation (e.g., the construction of space or the use of colors) tend to follow parallel patterns (Francastel, 1970). In literature, changes

in the plot of novels are often conducive to change in the tenses or pronouns deemed to be stylistically most effective (Barthes, 1953; Goldmann, 1964; Lukács, 1971).

Regardless of these interactions between theories and methodologies, the formal evaluation of individual contributions also presupposes a set of conventions underlying the publication of cultural works. In both cases, practitioners must believe in the merits of a system of beliefs articulated around the norms of universalism, organized skepticism, communism and disinterestedness (Merton, 1973; Mitroff, 1974; Krohn, 1977).

Yet, the meaning of the norms of universalism and organized skepticism remains relative. The differential nature of esthetic and scientific generalizations induces concomitant variations in the significance attached to the requirement of *reproducibility*. Because the validity attributed to a scientific theory depends on the replication of its findings by other scientists, scientific experiments must include a full presentation of the procedures followed, and of the results obtained; they must also be void of deliberate falsification. It is only under these conditions that current theories can be "falsified."¹⁰ In contrast, as exemplified by the *Venus of Milo*, the unfinished novel of Stendhal, *Lucien Leuwen*, or the unfinished movie of S. M. Eisenstein, *Que Viva Mexico*, works of art may become exemplars, as such subject to further testing, even when they are partially destroyed or incomplete. Further, esthetic forgery is not necessarily viewed as a sin by artists or by patrons, and Renoir, for example, allowed himself to correct and sign canvases painted by impostors (Renoir, 1960:185).¹¹

However, the stress placed upon the reproducibility of results also varies across scientific disciplines and its salience depends on the ease with which the prob-

¹⁰ It is interesting to note that to falsify scientific evidences is a vice, but that to falsify scientific theories is a virtue.

¹¹ Leger is supposed to have forged some Corots and Vlaminck some Cezannes. Further, the buyer of a Modigliani canvas painted by Elmyr decided after all to keep the painting as long as he was assured that the forgery was indeed the work of Elmyr (Irving, 1969).

lems deemed to be crucial are defined (Mitroff, 1974:592-3). Whereas conventional norms are dominant for well-structured problems, a set of counter-norms appear to be dominant for their ill-structured counterparts. As an illustration, the experiments conducted on the composition of lunar soil followed clear-cut procedures, but the rules of evidence adopted to identify the origin of such a soil were much more problematic. Further, the stress placed upon reproducibility also varies within the same discipline. In psychology for instance, the norms cannot be the same in the case of learning theories which maximize the principle of *proof* as in the case of psychoanalysis which maximizes the principle of *consistency* (White, forthcoming). Finally, this stress is minimal in those scientific fields that do not establish clear-cut distinctions between ideological and scientific statements or between externally and internally induced statements (Gouldner, 1976). As an example, the avoidance taboos that anthropologists display towards one another's tribes violate the principle of reproducibility.

In contrast to appearances, however, the notion of reproducibility is not totally absent either from artistic fields. Its significance is maximal in the case of the performing arts where it has grown as a result of the increased differentiation between composers and performers. Thus, the conflicts experienced by Romantic musicians between an ideology of progress and glorification of the past have made the notion of interpretation more problematic. Emphasized by certain Romantic composers, the obligation of playing partitions the very way they have been written by their authors has been criticized by contemporaries of Schuman, mocked by Satie, and more or less abandoned by modern composers such as Cage (Sennett, 1977:198-201). But like scientists, writers or painters also use reproducibility to test the limits of the most significant statements of their predecessors. In *Antigone*, Anouilh aimed at identifying the limits of the plot originally written by Sophocles. In many of his canvases, Cezanne sought to test the tectonic order sketched by Poussin (Kubler,

1962:87). Yet, because subjectivity is socially more acceptable in the arts than in the sciences, there are more significant interindividual variations in the form or the extent of the materials or techniques borrowed from the esthetic than from the scientific "Eminent Domain" (Ellmann, 1967; Maison, 1960; Meyer, 1967).

A comparative analysis of conformity to the norms of communism and disinterestedness across culture producing fields yields similarly fuzzy results. On the one hand, the publication of scientific works is presumably more economically gratuitous than that of esthetic endeavors. But because scientific rewards are hence essentially symbolic, the notion of priority is more value-ridden and conflict producing in the sciences. Charges of plagiarism are more extensively defined and sanctioned in the corresponding communities. On the other hand, the distinction between pure and applied entails uniform consequences in the privileges attached to certain types of artistic and scientific communications. The world of patents parallels the world of royalties, copyrights, and residuals.¹² Similarly, in spite of the obligation of sharing the fruits of their experiences, many artists and scientists delay publication, either to increase the rewards to which they aspire, or to eliminate potential sources of opposition. Their behavior in this regard varies both with their seniority and the stratification structure of their discipline (Sullivan, 1975:229-44). Newton's ideas on optics were thus published after the death of Hooke, his chief opponent on the topic (Nicholson, 1946:11-3). Similarly, Anais Nin waited until the end of her career before publishing *The Delta of Venus*, a piece of erotica which would have jeopardized her fame, had she published it earlier.

In both cases, conformity to norms and counternorms facilitate an identification of exemplars. In both cases, this identification induces a tendency to see the past develop linearly toward the current vantage point and partly by selection, partly by distortion, to view the work of signifi-

¹² It should be noted in this regard that the rights of musicians and actors are better protected than those of painters.

cant predecessors as abiding to the rules legitimized by the most recent revolutions (Merton, 1973; T. S. Elliott, as quoted by Kubler, 1962:35).

However, the time orientations underlying the definition of these exemplars vary both between and within artistic and scientific fields. In contrast to the visual and literary arts, the progress and hence future-oriented ideology of the "hard" sciences has always condemned theories proven false to immediate obsolescence (Polanyi, 1958:194). In this sense, scientific exemplars serve more demanding functions than their esthetic counterparts, but their life span is also shorter.

Yet, in both fields, the duration of exemplars depends upon the tensions between normal and revolutionary practices. To assert that scientific exemplars do not necessarily produce drastic changes in the outlook of the disciplines is merely to give preeminence to "normal" over "revolutionary" practices (Polanyi, 1958:220). Alternatively, to complain about the invalidity of the equation between older and better (Feyerabend, 1975) or to associate exemplars with the discoveries of new theories (Meyer, 1974) is to stress the preeminence of scientific revolutions. The same tensions characterize contemporary arts and literature. Whereas literary and artistic exemplars used to be defined in terms of jurisprudential precedents, the legitimation of the notion of avant garde induces a growing number of art connoisseurs to equate old with obsolescent (Baudrillard, 1972). "Art collectors must be taught how to throw works of art in the garbage can as they do refrigerators or cars when new models come on the market" (as quoted by Moulin, 1976:64).

Last, the life cycle of exemplars varies with the permeability of the various culture producing disciplines to external influences. In the physical sciences, the visibility of an exemplar remains constant as long as it has not been successfully challenged. In other words, boundaries between its life and its death are clear-cut. In contrast, the contribution of lay images to the formulation of the problems central to the social sciences or to the literary, musical or other artistic disciplines renders the life cycle of the relevant exemplars more

problematic. Indeed such life cycles often follow curvilinear patterns¹³ (Panofski, 1965; Haskell, 1976; Kubler, 1962). Thus, the current interest in sociobiology has induced a "renaissance" of the researches undertaken earlier by Spencer. In music, Vivaldi's music fell into oblivion until its rediscovery by Pincherle and Witold in the early 1950s. Finally, the extreme permeability of the performing arts to external influences enhances the fragility of the relevant exemplars. A play which has not been performed at the time of its conception or has been a failure is unlikely to be staged when it is rediscovered. Similarly, exemplars in methods of acting rarely survive the life time of their inventors.¹⁴

(2) *A comparison of artistic and scientific rhetorics.* The differential nature of artistic and scientific generalizations implies parallel contrasts in the languages used by the two types of practitioners (Hofstadter, 1955; Bronowski, 1956; Werner, 1975). However, these contrasts vary necessarily with the historically contingent conceptions that creative communities have of their audiences. Because of the requirement of reproducibility in the sciences, "scientific statements" are expected to reach out for materials beyond the self-contained confines of their own products and to begin with an overview of the conclusions which can be derived from the appropriate literature (Gusfield, 1976). For this reason, scientific demonstrations emphasize as much the *how* as the *what*. Yet the stress upon the *how* is also apparent in esthetic communities. Art galleries and museums often offer a highly structured catalog to their visitors. Similarly classical plays used to treat commonly known problems in order to enhance the visibility of the skills dis-

¹³ Thus, it is simply not true that the price of a painting is directly (positively or negatively) related to its age (Becker and Walton, 1976). In fact, this relationship takes a variety of forms and may follow curvilinear or threshold patterns (Reitinger, 1961; Robertson, 1970). In addition, these patterns seem to be subjected to an acceleration. Thus the "rediscovery" of eighteenth century painting took about a hundred years, whereas it took only fifty years for Art Deco to enjoy a renewed popularity (Moulin, 1976:78).

¹⁴ The case of Stanilawski offers an exception to this pattern.

played by their authors. Finally, it is because the public and the actors of the eighteenth century shared the same knowledge of the plays performed, that the latter aspired to repeat the lines most appreciated by their audiences (Sennett, 1977:77).

Secondly, in contrast to artistic style, scientific rhetoric is expected to be devoid of subjective touches and to emphasize the external nature of reality. Both scientific and esthetic rhetorics are nevertheless criss-crossed by conflicting currents in this regard. In general terms, the scientific vocabulary includes esthetic terms. Thus "the structure of the DNA was too pretty not to be true" (Watson, 1968:80, 105, 136). In addition, terms such as *findings*, *inventions*, *discoveries* suggest that Nature precedes human activity; but terms such as *creations* and *designs* remind us that technology, offering syntheses which satisfy functional requirements, breaks the "windowpane" which separates scientists from the outside world (Simon, 1969:55). Symmetrically, in the arts, the image of artists as creators competes with the image of artists as mere witnesses of the superior beauties created by Nature. In the context of this latter tradition which ranges from artists of Ancient Greece and China to Duchamp, the signs traced by Nature on leaves, driftwood or rocks represent the most advanced form of art; the major responsibility of artists is to make them available to the public (Caillois, 1960:54-68). In short, the rhetorics that minimize active human inputs in the creation of events cut across all fields.

Thirdly, the professional insulation of artistic and scientific communities introduces similar tensions in their respective rhetorics. All fields experience conflicts between *showing* (when the author avoids claims of authority) and *telling* (when he derives his assertions from his expertise). The resolution of these conflicts depends both upon the history of each field and its rank order in the hierarchy of the disciplines. The relative preeminence of "showing" in the use of mathematical formulas by social scientists reflects the higher status accorded to mathematics (Whitley, 1977:143-70). Similarly, the

high status enjoyed by scientists in the nineteenth century induced artists to borrow elements of a scientific rhetoric. Flaubert compared his activity as a novelist with that of a surgeon probing the soul of his characters.

Finally, the increased differentiation of artistic and scientific paradigms raises similar problems with regard to the identification of appropriate audiences. In sociomedical studies, articles about drinking as a social problem appear most frequently in the *Quarterly Journal of Studies on Alcohol* (Gusfield, 1976:19). In the same vein, Broadway, off-Broadway and off off-Broadway refer simultaneously to differing theatrical styles and differing theater houses. In more general terms, the choice of a rhetoric appropriate to an audience whose properties are increasingly elusive, raises similar difficulties in the social sciences and the arts. In both cases, these difficulties reflect the changing boundaries between insiders and outsiders, and hence between practitioners and the "objects" of their researches (Merton, 1973). In this regard there are marked parallels between the history of black or women's art and the history of black and women's studies. Black social scientists and black artists were obliged to use a white-dominated "universalistic" ideology, as long as their survival was exclusively dependent upon the good will of a white cultural elite (Rosenberg, 1977). In the same vein, the assertion that a woman's art presents traits that are inaccessible to a male audience (as quoted by Glueck, 1977:66) requires the development of specialized galleries entitled to cater to the needs of a specialized audience of insiders.¹⁵

A Comparison of Artistic and Scientific Paradigms As Systems of Rewards

Both the norms and the rhetorics characteristic of a particular paradigm constitute justifications of the processes underlying the identification of successful indi-

¹⁵ It is possible, however, to speculate as to whether "women's art" in this regard is not condemned to experience the same fate as regional or populist stylistic forms, successes of which have been short-lived.

viduals. As the autonomy and the cohesiveness of culture producing communities evolve in differing directions, there are increased contrasts in the organization of their respective reward systems. As a result, the form, the object, the timing, and the consequences of the tensions generated by the identification of successful individuals vary across specific disciplines as well as over time.

As a discipline is dominated by one single paradigm, the identification of successful practitioners tends to occur within the community itself and the ensuing tensions oppose insiders to one another. Conversely, among these fields split by a variety of paradigms, it is customary to differentiate those individuals who are recognized by their peers from those who obtain a commercial success. In other words, the allocation of rewards tends to generate internal wars in the first case, but both internal and external wars in the second one. In addition, the greater the domination of one single paradigm in a discipline, the greater the likelihood that the tensions will pertain to the priorities of discoveries and hence to the charges of plagiarism. In contrast, among those fields split by a variety of paradigms, conflicts will more often pertain to the relative originality of competing statements. Finally, the more a discipline is dominated by one single paradigm, the shorter tends to be the lapse of time evolving between the publication of a work and the public recognition of its qualities. Thus, posthumous recognition is an oddity in the natural sciences, since the worth imputed to a scientific work is a function of its immediate contribution to existing theories.¹⁶ In contrast, the "careers" of works in the arts or the social sciences follow more complex patterns; Stendhal, for example, knew that his success would not be immediate when he dedicated the *Red and the Black* to the "happy few."

Secondly, the opportunities enjoyed by individual practitioners depend upon the developments of their field and its permeability to external forces. Indeed, while creative personalities differ from one an-

other in terms of their qualities of obsessiveness, versatility, evangelism, rebelliousness or avant gardism (Kubler, 1962), the rewards derived from such qualities vary with the problems deemed to be crucial in each field.

At any one point in time, practitioners tend therefore to migrate toward activities which offer greater opportunities. These migrations reflect the combination of three conditions: (1) both disciplines must be considered to be professional; (2) the field of destination must be rank ordered lower than the field of origin; (3) the former must however be characterized by less competition than the latter. At one single point in time, professional migrations tend therefore to be unidirectional. Thus the development of experimental psychology required the mobility of high status physiologists toward the less competitive field of philosophy, of which psychology was initially only a specialty (Ben-David and Collins, 1966:465). Similar patterns may be more casually identified as far as the arts are concerned. The renewal of religious decorations of tapestries or of ceramics was facilitated by the migrations of painters such as Matisse, Leger, Rouault, Cocteau and Picasso toward the corresponding disciplines. In the same vein, the renewal of the French theater after World War II has been stimulated by the invasion of novelists such as Sartre or Camus.¹⁷

Third, even though the "Matthew effect" arbitrarily enhances the visibility of the contributions made by senior artists or scientists, its power varies across disciplines. It is for example, lower in biology than in physics (Allison and Stewart, 1974:602). This is because biology is characterized by a low consensus over issues of theory and methodology, does not have a core system of communications, and does not facilitate the intergration of prac-

¹⁶ The work of Mendel in genetics stands of course as an exception to this general pattern.

¹⁷ The argument could be expanded to other fields. Thus, French writers have invaded the field of lyricists and French painters such as Picasso have designed posters. In contrast, it is difficult for lyricists to be acclaimed as poets or novelists or for poster designers to acquire fame as painters. In more general terms, then, it is easier for artists to invade the world of craftsmen than for craftsmen to be labelled artists. Hence potters who want to be treated as artists will relabel themselves as ceramists.

tioners in single organizations. By analogy, it is possible to suspect that the Matthew effect is more powerful in the musical domain than in the art world. As already noted, the first discipline remains more integrated than the second one.

Last, individual careers depend upon the control that each discipline exerts upon the two major scarcities represented by access to the relevant raw materials and to the public. The greater this control, the greater the prestige attached to teaching which becomes the ultimate reward accorded to successful practitioners. Architecture, medicine or theater offer as many cases in point because the relations of sponsorship prevailing in such disciplines enable professors to select their best students and control the progress of their careers. Conversely, painters and writers cease to teach as soon as they are sufficiently successful. This is because the segmentation of the relevant markets and the dispersion of the means of esthetic production prevent the most successful practitioners from controlling the careers of newcomers. Thus Sartre ceased to teach as soon as his talent as a writer was sufficiently established. Similarly Matisse is the last great painter to have unsuccessfully tried to open a school.

A Comparison of the Socialization Functions of Artistic and Scientific Paradigms

Even though all communities are necessarily concerned with the social integration of newcomers, the form, the stability, and the instruments of socialization vary not only with the number of paradigms dividing each discipline but also with the ideological orientations accompanying the corresponding plurality.

Hard science communities tend to establish clear-cut distinctions between truths and errors. Because of their professed rationality, and of their ahistorical orientations, they reject as inappropriate for professional scrutiny, theories and techniques held to be erroneous. In other words, the invisibility of scientific revolutions results from the continuous elimination from the appropriate textbooks of all materials that have become obsolete. In

contrast, the polyparadigmatic nature of the social sciences or the arts makes the relevant instruments of socialization more durable. Museums and libraries seem to play a more important role in the training of artists or social scientists than of physicists or chemists (Kuhn, 1970:167).¹⁸

Yet this overall contrast should not mask differences in the ideological relations that each discipline establishes between its own time orientation and its differentiation of a high versus a low or a professional versus an amateur culture. Indeed, various disciplines do not experience the same types of tensions in the way they use the past, the present and the future in their evaluation of a particular work. Nor do they use similar criteria for defining the hierarchy of the tasks to be mastered by individual practitioners. Nor do they establish similarly strong connections between these two dimensions.

The greater the salience of such connections, the greater the stability of the sequential order in which the various components of the relevant curricula are presented to students. There are increasingly sharp contrasts in this regard between the modes of socialization used by scientific and musical communities on the one hand and by fine art schools on the other. In spite of their future orientations, scientific communities continue to teach first how to deal with "obsolete" problems such as inclined planes, conical pendulums, and it is only later in the sequence that newcomers learn how to deal with the symbolic generalizations currently shared by professional physicists. In short, the apprentice must first master the wisdom collectively accumulated by the profession before being allowed to undertake future-oriented research activities (Kuhn, 1970:47; 139). To a certain extent, patterns of musical socialization retain a similarly stable sequence involving the initial mastering of historically stable techniques

¹⁸ Of course, the importance attached to such institution in the context of the arts and the social sciences depends upon the time orientations attached to specific paradigms. The more ahistorical schools of thought in sociology tend to regard the teaching of classical theories as having little significance and prefer students to learn "ahistorical" techniques or methodologies.

and syntaxes. In contrast, the partial legitimation of the notion of avant garde in the visual arts has been accompanied by an increased erosion of the boundaries between high and low or professional and amateur stylistic forms. Because of the resulting legitimation of subjectivity, the practice and the teaching of the visual arts have become distinctive activities entered in distinctive paradigms. Thus, there is a constant decline in the importance attached to the copying of canvasses or statues in painting and to throwing in ceramics, and this decline cannot but accentuate further the segmentation of existing paradigms.¹⁹

But disciplines also differ from one another in terms of the *form* of the connections they establish between their time orientations and their rank ordering of the tasks to be performed by individual practitioners. This explains the differential fate experienced by museums across fields. At one end of the continuum, museums of science and industry have been initially built after the model of museums of natural history, institutions that are almost as old as museums of art and have originally aimed at serving the needs of a professional and a high culture. Yet, the early legitimation of a future- and progress-oriented ideology in the sciences has rapidly condemned scientific museums to run behind the times and to collect scientific artifacts that are necessarily worthless because of their obsolescence. Correspondingly, these past-oriented scientific museums can only be instruments of diffusion and they serve, as such, the need of a low or an amateur scientific culture.

At the opposite end of the continuum, the shift of the cinema from a low to a high culture status requires the legitimation of the work undertaken by current directors through the legitimation of the movies made by their predecessors. Past-oriented cinémathèques reflect this shift and are currently used as a socializing mechanism for newcomers in the profession.

In the center of this continuum, the ambiguous status of art museums reflects the

conflicting views that cultural elites hold toward the relationships between the time orientations and the distinction opposing high to low or professional to amateur stylistic forms. Since the middle part of the twentieth century, museums are simultaneously praised and criticized for being the temples of a past-oriented high culture. More than one hundred years ago, the "socialist" art critic Delecluze complained that museums were nothing but the "hospitals if not the graveyards of art." Today in spite of its ahistorical here and now orientations, the Centre Beaubourg in Paris is criticized for being a center of cultural reanimation rather than animation (as quoted by Huser, 1978; Huxtable, 1978). In short, because the notion of avant garde is more problematic in the case of the arts than of the sciences, the functions of museums remain more uncertain in the first than the second context.

A Comparative Analysis of Artistic and Scientific Revolutions

The institutionalization of creative activities, and the resulting control that paradigms exert on practitioners and their ideas, both influence and are influenced by recurrent tensions between the needs for stable beliefs and the need to unmask old truths as illusions (Hudson, 1972; Peckham, 1969). In their normal forms, both the arts and the sciences consist of puzzle-solving activities within a preexisting framework. But because artistic and scientific disciplines *have* histories, as much as they *are* histories (Moscovici, 1968:48), they also experience revolutions. In science, "electricity has perhaps existed as an abstract force before becoming a source of energy; yet it had no historical meaning as long as men did not ask questions about it" (Gramsci, 1959: 172). Similarly in the arts, "there was no fog in London before Turner" (Wilde, as quoted by Renoir, 1962: 212). In short, all disciplines experience discontinuities.

The salience and the frequency of these discontinuities may differ across specific disciplines. In the physical sciences, the small size of research communities, their

¹⁹ This decline is accompanied by a rejection by students of teachers who are primarily concerned with the diffusion of their own styles (Strauss, 1970).

professional insulation and the limited scope of the activities to be performed by individuals slows down the occurrence of revolutions but commits the entire profession to subsequent shifts of values (Barnes, 1973:182-98). Correspondingly "the ratio between the trust and the rejection of existing hypotheses evolves within narrow limits that are closer to the trust side" (Campbell, 1974: 5; 1977). In contrast, the high permeability of artistic or of social science communities and their low patterns of division of labor facilitate the occurrence of revolutions whose effects are only partial and experienced by a limited segment of the population (Hudson, 1972).²⁰

Regardless of these overall contrasts, one might assume that the differential traits of artistic and scientific revolutions reflect the life cycles of the paradigms specific to each field. If this is so, one should compare the processes by which little art has evolved into big art and little science has become big science (De Solla Price, 1963). Given the fact that a paradigm requires a certain amount of time to achieve a visibility twice as large as at the time of its inception (as measured in terms of the number of its adherents, their works, the references they elicit), does the logistic growth of various paradigms follow patterns that are specific to each discipline? Are such patterns similarly influenced by floor and ceiling effects? Clearly, Seurat anticipated the research suggested here when he wrote to Signac, "The more we are to use the technique of dots, the less original it will be and the more artists will explore new frontiers or boundaries" (as quoted by Perruchot, 1966). Further, are such patterns independent of historical time, or is the logistic growth of paradigms faster in the case of newer than older disciplines or faster as one gets closer to the twentieth century?²¹

²⁰ It would be necessary in this regard to compare those fields where the emergence of new paradigms results primarily from the immigration of practitioners already established in other disciplines with those fields where this emergence reflects primarily the work of newcomers to the profession.

²¹ For example, one could compare the logistic growth of Impressionism in painting and of atonalism in music. Yet it would remain necessary to ascertain whether the contrasts eventually observed in this

In the same way, it remains necessary to identify similarities and contrasts in the outcome of artistic and scientific revolutions. In both cases developmental processes seem to be marked by an accentuated articulation and specialization and hence by a transformation of the boundaries separating disciplines from one another (Kuhn, 1970: 172). But does the succession of these stages reflect a closed evolutionary scheme in which exemplars can be viewed as increasingly more accurate approximations of a permanent Truth or Beauty? Or is the evolution of artistic and scientific exemplars a patchwork of random mutations (Kuhn, 1970:173; Gablik, 1976:10; Campbell, 1977)? Assumptions made in this regard may have differing histories in the case of the arts and the sciences. Patterns of ideological commitments have followed diverging routes between the two fields.²²

Summary and Conclusions

Our general purpose in this paper has been to assess the extent and the determinants of the variability underlying the organizational patterns of specific paradigms both *between* and *within* the arts and the sciences. On the one hand, all disciplines confront similar problems in their attempts to rationalize the control of the two major forms of scarcity with which they are confronted, that is access to raw materials and access to the public. On the other hand, division of labor also fosters a growing segmentation of artistic and scientific disciplines and their respective audiences. Because of the differential responses of culture producing disciplines to technological innovations or to changes in economic forces, their communities

regard reflect the differential technical characteristics of the two fields or historical changes in the use that distinctive art worlds make of new means of diffusion.

²² It is interesting in this regard to note that Gablik's stance toward the evolution of the arts comes at a time when most scientists take an opposite view as far as science is concerned. Whereas Gablik asserts that art evolves closer toward an *Esthetic Absolute*, the latter posit that the definition of science is culturally relative. Of course, such divergences are likely to increase with the accentuated segregation of the relevant occupations (Grana, 1964; Kuhn, 1970).

have increasingly distinctive structures. For this reason, there are also historical and functional variations in the processes by which practitioners within each discipline, negotiate the definition of (a) the tasks to be performed, (b) the rewards to be allocated, (c) the socialization of newcomers in the profession and (d) the distinction between normal and revolutionary practices.

An analysis of these negotiations highlights the major requirements of a sociology of creativity. The first of these requirements is to evaluate the variability of the modes of interaction between the members of a specific discipline and the outcome of their activities. Thus, it does not make sense to speculate whether "works of art or works of science illuminate one another" (Meyer, 1974:163-210). Nor does it make sense to state that we do not read Shakespeare in the same way that we read Newton as long as we do not ascertain whether the "we" refers to artists, scientists, or to specific segments of their respective audiences.

Secondly, the relationships that develop between works of art or works of science are not independent of the interactions among practitioners or between them and their respective publics. The production of an artwork or of a scientific theory may require a network of cooperative relations among various individuals, but their publications entail a succession of competitive behaviors among practitioners, between them and critics and between the worlds of "professionals" and the public at large. Thus a sociology of creativity should not be reduced to an examination of the *dyadic* relations between artists or scientists and their works, or between the members of a same creative community. Insofar as cultural worlds involve competing ideas and competing individuals, triads are more significant units of analysis than dyads.

Last, the negotiation of artistic or scientific evidence never takes place in a temporal vacuum. The time within which this negotiation takes place is threefold. First, the actors involved in the negotiation always use time as a benchmark against which they evaluate the product subjected to their scrutiny. At one single point in

time, *better* may mean *older* in certain disciplines but *newer* in others. Secondly, these negotiations involve a cycle of "give and take" until there is enough social stability in the patterns of exchange among practitioners or between them and their audiences to facilitate the formation of a partial or total paradigm. Third, negotiations are also part of a larger plot (Sennett, 1977:35). Insofar as a discipline experiences revolutions, it is as much subjected to the forces of disorder as to those of equilibrium. The transformation of paradigms is therefore as important to study both independently of and in relation to historical time as their perpetuation.

To conclude, our purpose has been to conjure the three demons confronting sociologists in their tasks. Sociological generalizations tend to be more ideological than scientific when they mask the internal variability of the phenomena analysed, and hence when they assume the existence of undifferentiated artistic or scientific paradigms instead of testing first the internal variability of artistic disciplines on the one hand and of their scientific counterparts on the other. In addition, these generalizations are also more ideological than scientific when they isolate esthetic phenomena from their surroundings and induce an arbitrary analysis of "attributes" rather than of relations (Payne, 1976). Indeed, such generalizations cannot but recreate the very stereotypes that their authors were supposedly interested in dispelling.²³ Last, these generalizations are more ideological than scientific when they remain ahistorical and are not focused on the divergences and convergences in the histories of specific disciplines. It is perhaps because such demons prowl continuously in the field of sociology, that this particular form of knowledge and its paradigms are sometimes described as an art form rather than as a science (Gouldner, 1976; Nisbet, 1976).

²³ At best, many sociologists of the arts use time independently of history. Their work offers in this regard a striking contrast with their counterparts in the sociology of science whose contributions are taking into account the interaction between sociological and historical times (Levi-Strauss, 1958).

REFERENCES

- Ackerman, J.
1969 "The demise of the avant garde." Pp. 371-84 in *Comparative Studies in Society and History*.
- Albrecht, M.
1968 "Art as an institution." *American Sociological Review* 33:383-96.
- Allison, P. and J. Stewart
1974 "Productivity differentials among scientists; evidence for the accumulation of advantages." *American Sociological Review* 39:596-605.
- Arnheim, R.
1966 *Toward a Psychology of Art*. Berkeley: University of California Press.
- Attali, J.
1977 *Bruits*. Paris: Presses Universitaires de France.
- Barnes, B.
1973 "Anomaly versus falsehood." Pp. 182-98 in R. Horton and R. Finnegan (eds.), *Modes of Thought*. London: Faber and Faber.
- Barthes, R.
1953 *Le degré zéro de l'écriture éléments de sémiologie*. Paris: Le Seuil.
- Barzun, J.
1974 *The Use and Abuse of Art*. Princeton: Princeton University Press.
- Baudrillard, J.
1972 *Pour Une Économie Politique du Signe*. Paris: Gallimard.
- Becker, H.
1974 "Art as collective action." *American Sociological Review* 39:767-76.
1978 "Arts and crafts." *American Journal of Sociology* 83:862-89.
- Becker, H. and J. Walton
1976 "Social science in the work of H. Haacke." Pp. 145-52 in H. Haacke (ed.), *Framing and Being Framed*. New York: New York University Press.
- Ben-David, J. and R. Collins
1966 "Social factors in the origin of a new science." *American Sociological Review* 31:659-65.
- Bennett, S.
1972 *Other People's Music*. Ph.D. dissertation, Department of Sociology, Northwestern University.
- Bronowski, J.
1956 *Science and Human Values*. New York: Messner.
1966 "The logic of the mind." *American Scientist* 54:1-14.
- Caillois, R.
1960 *Méduse et Compagnie*. Paris: Gallimard.
- Campbell, D. T.
1974 *Qualitative Knowing in Action Research*. Kurt Lewin Award Address, New Orleans.
1977 *William James Lectures*. Harvard University.
- Cavani, L.
1974 *Interview with Claire Clouzot Ecran*. Vol. 25.
- Copeland, R.
1977 "When films quote films they create a new mythology." *New York Times* (Sept. 25): D 1 and 4.
- De Santillana, G.
1959 "The role of arts in scientific Renaissance." Pp. 33-45 in M. Clagett (ed.), *Critical Problems in the History of Science*. Madison: University of Wisconsin Press.
- De Solla Price, D.
1963 *Little Science, Big Science*. New Haven: Yale University Press.
- Drees-Ruttencutter, H.
1977 "Onward and upward with the arts: a pianist's progress." *The New Yorker* (Sept. 19) 53:42-107.
- Ellmann, R.
1967 *The Eminent Domain*. New York: Oxford University Press.
- Feyerabend, P.
1975 *Against Method*. Atlantic Highland: Humanities Press.
- Francastel, P.
1970 *Études des Sociologie de l'Art*. Paris: Denoel.
- Freund, G.
1974 *Photographie et Société*. Paris: Le Seuil.
- Gablik, S.
1976 *Progress in Art*. London: Thames and Hudson.
- Gezels, J. and M. Csikszentmihalyi
1976 *The Creative Vision*. Chicago: University of Chicago Press.
- Glueck, G.
1977 "The woman as artist." *New York Times, Sunday Magazine* (Sept. 25):66.
- Goldmann, L.
1964 *Pour Une Sociologie du Roman*. Paris: Gallimard.
- Gouldner, A.
1976 *The dialectic of ideology and technology*. New York: Seabury.
- Gramsci, A.
1959 *Oeuvres Choisies*. Paris: Le Seuil.
- Grana, C.
1964 *Bohemians versus Bourgeois*. New York: Basic Books.
- Griffin, C. and B. Griffin
1976 "Comment on Becker's art as collective action." *American Sociological Review* 41:174-5.
- Gusfield, J.
1976 "The literary rhetoric of science, comedy and pathos in drinking drivers research." *American Sociological Review* 41:16-33.
- Haskell, R.
1963 *Patrons and Painters*. New York: Knopf.
1976 *Rediscoveries in Art*. Ithaca: Cornell University Press.
- Hennion, A., J. P. Vignolle, and P. Piquaie
1975 *La Production Musicale: Les Politiques des Firmes Discographiques*. Paris: Centre de Sociologie de l'Innovation.
- Hofstadter, A.
1955 "The scientific and literary uses of language." Pp. 291-335 in L. Bryson, L. Finkelstein, H. Hoagland and R. McIver

- (eds.), *Symbols and Society*. New York: Conference on Science, Philosophy and Religion in Their Relation to the Democratic Way of Life.
- Huaco, G.
1965 *Sociology of the Film Art*. New York: Basic Books.
- Huxtable, L.
1978 "Two museums." *New York Times* (June 19): Section D.
- Hudson, L.
1972 *The Cult of the Facts*. London: Cape.
- Huser, F.
1978 "Beaubourg An II." *Le Nouvel Observateur* 691:68.
- Irving, C.
1969 *Fake*. New York: McGraw-Hill.
- Ivins, W.
1969 *Prints and Visual Communication*. Cambridge, Ma.: MIT.
- Kevles, D.
1977 *The Physicists: The History of a Scientific Community in Modern America*. New York: Knopf.
- Krohn, R.
1977 "Scientific ideology and scientific process; the natural history of a conceptual shift." Pp. 99-102 in E. Mendelsohn, P. Weingart and R. Whitley (eds.), *The Social Production of Scientific Knowledge*. Dordrecht: Reidel.
- Kubler, G.
1962 *The Shape of Time*. New Haven: Yale University Press.
- Kuhn, T.
1969 "Comments on the relations of science and arts." Pp. 403-12 in *Comparative Studies in History and Society*, Vol. 11.
1970 *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lammers, C.
1974 "Mono and polyparadigmatic developments in natural and social sciences." Pp. 124-48 in R. Whitley (ed.), *Social Processes in Scientific Development*. London: Routledge and Kegan Paul.
- Leighningher, R.
1976 "On the comparative sociology of arts and sciences." Paper delivered at the annual meeting of the American Sociological Association, New York.
- Levi-Strauss, C.
1958 *Anthropologie Structurale*. Paris: Plon.
- Loesser, A.
1955 *Men, Women and Piano*. New York: Simon and Schuster.
- Lukács, G.
1971 *The Theory of the Novel: A Historical-Philosophical Essay on the Forms of the Great Epic Literature*. Cambridge, Ma.: MIT.
- Maison, K.
1960 *Themes and Variations: Five Centuries of Masterpieces and Interpretations*. London: Thames and Hudson.
- Masterman, M.
1970 "The nature of a paradigm." Pp. 59-90 in I. Lakatos and I. Musgrave (eds.), *Criticism and the Growth of Knowledge*. Cambridge, Eng: Cambridge University Press.
- Mayer, W.
1975 "Live musicians and dead audiences." *New York Times, Sunday Magazine* (February 2): 12 and 34.
- Merton, R.
1973 *Sociology of Science*. Chicago: University of Chicago Press.
- Meyer, L.
1967 *Music, the Arts and Ideas*. Chicago: University of Chicago Press.
1974 "Concerning the arts, the sciences and the humanities." *Critical Enquiry* 1:163-219.
- Mitroff, I.
1974 "Norms and counternorms in a selected group of the Apollo mission scientists." *American Sociological Review* 39:579-95.
- Moscovici, S.
1968 *Essai sur l'Histoire Humaine de la Nature*. Paris: Flammarion.
- Moyer, D.
Forth-coming *Revolution in Science: The 1919 Eclipse Test of General Relativity Proceedings of the Sixteenth Coral Gables Conference on High Energy Physics*.
- Moulin, R.
1976 "Les intermittences économiques de l'art." *Traverses* 3:64-78.
- Nicholson, H.
1946 *Newton Demands the Muses*. Princeton: Princeton University Press.
- Nisbet, R.
1976 *Sociology As an Art Form*. New York: Oxford University Press.
- Panofski, E.
1965 *Renaissance and Renascence in Western Art*. Stockholm: Almqvist and Wicksell.
- Payne, C.
1976 *The Only Thing I Bring Is My Radio*. Ph.D. dissertation, Department of Sociology, Northwestern University.
- Peckham, M.
1969 *Art and Pornography*. New York: Basic Books.
- Pelles, G.
1963 *Art, Artists and Society*. Englewood Cliffs: Prentice-Hall.
- Pevsner, N.
1940 *Academies of Art: Past and Present*. Cambridge, Eng.: Cambridge University Press.
- Poggioli, R.
1971 *The Theory of the Avant Garde*. New York: Harper and Row.
- Polanyi, M.
1958 *Personal Knowledge*. Chicago: University of Chicago Press.
- Renoir, J.
1960 *Renoir*. Paris: Hachette.
- Reitlinger, C.
1961-1970 *The Economics of Taste*. London: Barry and Rockliff.

- Robertson, W.
1970 "The convertible play in original prints." *Fortune* 81:177-80.
- Rockwell, J.
1976 "Why are ballet orchestras bad?" *New York Times* (Sept. 12):12.
- Rosenblum, B.
1978 "Style as social process." *American Sociological Review* 43:422-38.
- Rosenberg, H.
1977 "Being outside." *The New Yorker* 53 (Aug. 22):83-96.
- Schnaiberg, A.
1977 Obstacles to environmental research by sciences and techniques: a social structural analysis. *Social Problems* 25:509-20.
- Seitz, M.
1977- "We all loved each other so much." *Film Quarterly* 31:45-7.
1978
- Sennett, R.
1977 *The Fall of Public Man*. New York: Vintage.
- Shapin, S. and A. Thackray
1974 "Prosopography as a research tool in the history of science." Pp. 1-28 in *The British Scientific Community. History of Science*, Vol. 12.
- Simon, H.
1969 *The Sciences of the Artificial*. Cambridge, Ma.: MIT.
- Sontag, S.
1977 *On Photography*. New York: Farrar, Straus and Giroux.
- Strauss, A.
1970 "The art school and its students: a study and an interpretation." Pp. 159-77 in M. Albrecht, J. Barnett and M. Griff (eds.), *A Sociology of Art and Literature*. New York: Praeger.
- Sullivan, D.
1975 "Competition in bio-medical science: extent, structure and consequences." *Sociology of Education* 68:223-42.
- Watson, P.
1968 *The Double Helix*. New York: New American Library.
- Werner, O.
1975 "On the limits of social science theory." Pp. 677-90 in M. Kinkade, T. Hale and O. Weiner (eds.), *Linguistics and Anthropology*. Lisse: Peter de Rider.
- White, H. and C. White
1965 *Canvases and Careers*. New York: Wiley.
- White, S.
Forth- "The dialectic of method and theory in the coming work of psychology." In N. Datan and M. Reese (eds.), *Life Span and Developmental Psychology: Dialectical Perspectives on Experimental Research*. New York: Academic Press.
- Whitley, R.
1977 "Changes in the social and intellectual organization of the sciences: professionalization and the arithmetic ideal." Pp. 143-70 in E. Mendelsohn, P. Weingart and R. Whitley (eds.), *The Social Production of Scientific Knowledge*. Dordrecht: Reidel.
- Wittkover, R. and M. Wittkover.
1969 *Born under Saturn*. New York: Norton.
- Ziman, J.
1966 *Public Knowledge*. Cambridge, Eng.: Cambridge University Press.
- Zolberg, V.
n.d. "Displayed art and performed music: selected innovation and the structure of artistic media." Unpublished paper. Department of Sociology, Purdue University, Calumet City.

GAPS AND GLISSANDOS: INEQUALITY, ECONOMIC DEVELOPMENT, AND SOCIAL MOBILITY IN 24 COUNTRIES*

ANDREA TYREE

State University of New York at Stony Brook

MOSHE SEMYONOV

University of Nebraska, Lincoln

ROBERT W. HODGE

State University of New York at Stony Brook

American Sociological Review 1979, Vol. 44 (June):410-424

Intergenerational mobility has been seen as influenced by both level of economic development and political democracy. Here, with a sample of 24 countries, the first of these relationships is assessed. The observed effect of economic development (GNP/capita) on mobility we conclude to be a spurious consequence of the shape of the stratification system, indicated here by the shape of both reward distributions and occupational distributions. Some discussion precedes this analysis about how the shape of a stratification system should affect mobility. Some discussion follows about how the shape of the system must affect political democracy, and leads us to a partial reinterpretation of the findings of Robinson and Quinlan (1977) on this topic.

BACKGROUND

Social mobility has long been viewed as an integrative mechanism for societies. Exogamous marriage rules (which assure mobility for women) are taken as responses to a need to link potentially conflicting groups through kinship. Toqueville saw opportunities for social mobility in the United States of the nineteenth century as contributing to the stability of political democracy in the country. He also saw the greater openness of the British than the French aristocracy as crucial in understanding the relative political stability of the two countries. A similar position has been more recently stated by Baltzell (1958), who argued that those societies in which ruling groups accept achievement elites into aristocratic membership will suffer less social turmoil than those whose aristocracies do not.

Social mobility has also been taken as the disintegrative consequence of the rationalization of production accompanying industrialization. The gap between social origins and social destinations was taken as an indicator of status inconsistency by any student of the problem who had both variables available, and justifiably so. Students of both the family and immigrant

ethnic minorities detailed the disruptive consequences of the mobility of offspring and their intermarriage with members of outgroups. Changes over time in the structure of opportunities and the conditions under which specific opportunities are available, effectively force social mobility, both upward and downward, as well as laterally between situations. Altered opportunity structures have consequences both for individuals and for societies. What may be integrative for society may be disintegrative for individuals, families, and social networks.

What the two perspectives have in common is a sense that a thorough understanding of a social structure at any time, *t*, is inadequate for an understanding of the behavior or satisfaction of its members. Both individual senses of satisfaction and the integration of the system is a function of actual movement that has occurred between *t* minus something and *t*, as well as movement anticipated between *t* and *t* plus something. Mobility itself has consequences.

This is a difficult position to argue in the current climate of our discipline. Blau and Duncan (1967) persuasively recast the interest in social mobility initiated theoretically by Sorokin in 1927 and, practically, by Rogoff in 1951 into a problem of status attainment in which no mobility variable has reason to appear. They argued that

* Address all communications to: Andrea Tyree; Department of Sociology; State University of New York; Stony Brook, NY 11794.

mobility correlations are unnecessarily inaccessible combinations of simple associations with origin and destination variables. The process by which mobility occurs could be more easily understood (more easily presented) without these troublesome mobility variables. They were both astute judges of their audience and truthful: If the variance of origin and destination variables is approximately the same (which it usually is) associations involving mobility and attainment are simple transforms of one another. Equations predicting attainment are easier to write sentences about than are those predicting mobility. To choose the path of easier presentation was surely productive: a bibliography of work on status attainment flowing from the original Blau-Duncan volume would fill half of this journal.

Blau and Duncan (1967) made a wise decision for students of the determinants and consequences of the social mobility of individuals. Their decision was an unfortunate one for the study of the determinants and consequences of social mobility for social systems. By focusing on describing the way occupational roles and statuses are allocated within societies, they drew attention away from differential levels of mobility as characteristics of social systems.

We do not wish to convey the impression that cross-national comparisons of social mobility are rare. Quite the contrary. The active support of the International Sociological Association at the beginning of the 1950s (ISA, 1951) promoted mobility studies in a number of European countries. This activity culminated in a comparative report of the cross-national findings by Miller in an entire issue of *Current Sociology* (Miller, 1960). Several others have ventured reanalyses of the original data, as well as adding to them data from the expanding body of occupational mobility studies around the world (Lipset and Bendix, 1959; Fox and Miller, 1965; Blau and Duncan, 1967; Cutright, 1968; Hazelrigg, 1974; Hazelrigg and Garnier, 1976). Recently, almost every study of intergenerational social mobility devotes a chapter or section to the comparison of the nation in question with some other countries. For example Broom and

Jones (1969) compare Australia to the U.S. and Italy; Garnier and Hazelrigg (1974) compare France to the U.S. and Australia; Kahl (1968) and Simmons (1975) compare mobility in different Latin American cities each in a different country; Mellic (1965) and Andorka (1971) try to compare experiences within communist Yugoslavia and Hungary with those in noncommunist countries; Tominga (1970) compares Bangkok to industrialized countries.

Two alternative, though not necessarily contradictory, explanations for variations in levels of social mobility run through these works. The first sees mobility as a function of political democracy, the second sees it as a function of industrialization. Sorokin (1927:160) argued the first, concluding: "Though the so-called democratic societies are often more mobile than the autocratic ones, nevertheless the rule is not general and has many exceptions." The view of American democracy as promoting uniquely high levels of mobility in the United States was accepted by Glass (1954) in his pioneering study of social mobility in Great Britain. Seeing high rates of social mobility as both preserving an existing system of social stratification and promoting the stability of democracy, Blau and Duncan (1967:439-440) acknowledged an association between democracy and mobility, but reversed the direction of causation to that implicit in Toqueville.

The alternative view of industrialization, rather than political democracy or egalitarian ideology, as determining the level of intergenerational occupational mobility, was first specifically taken by Lipset and Bendix (1959). They found little variation in rates of mobility in nine industrialized nations, and concluded that generic conditions of industrialization explained the uniformity of mobility. Despite a general consensus that relying on a variable constant in one's data as an explanation of findings is a poor research strategy, the view of Lipset and Bendix has prevailed.

The importance of industrialization was questioned relatively early in the history we are reporting. Fox and Miller (1965) compared patterns of upward and down-

ward mobility in twelve nations, relating the differences to G.N.P., education, political stability, urbanization, and achievement motivation. They concluded:

The level of economic development does not emerge as important with respect to upward mobility. . . . [E]conomic factors are important but they are not unique determinants of mobility nor do they operate in any simple way. (Fox and Miller, 1965:91)

Technical problems in the data analysis of Fox and Miller led their conclusions to be discounted (see Blau and Duncan, 1967:433). Industrialization quickly regained credibility as a determinant of intergenerational social mobility through Cutright's (1968) cross-national analysis of occupational inheritance (inheritance being what mobility is not).

How industrialization might influence mobility has received less attention than whether or not the two are related. The most thoughtful and detailed exploration of the mechanisms by which industrialization might promote mobility is Treiman's (1970). Yet even here, it is not clear what, about industrialization, loosens the ties of social origins and promotes mobility. Treiman can only suggest that increased industrialization implies expanded education, mass communication, urbanization, and geographical mobility. These in turn influence circulatory mobility.

The role of industrialization as a correlate of mobility recently came under attack by Hazelrigg and Garnier (1976). They rely on a sample of 17 countries that vary in level of economic development a good deal more than had those analyzed by previous students of the subject. Using energy consumption per capita as an index of industrialization and two variants of a measure of circulatory mobility (unfortunately unidentified in the 1976 paper) obtained after alternate Deming adjustments of the 17 mobility matrices, they conclude that "variation in the strictly endogenous process of labor mobility was *not* related to level of productivity" (Hazelrigg and Garnier, 1976:504).

The current position of this field is somewhat confused. The confusion is a consequence of two factors. First, the varying methodologies of the several contributors to the literature have led to vary-

ing findings. Second, other than the possible relationship with industrialization or political democracy, it is not clear why one would care to ask if one country has more mobility than another. The issue has not been cast by anyone as being important for understanding social organization.

The answer one gets to a question is dependent on the operational way the question is posed. Lipset and Bendix (1959) relied on outflow percentages in a trichotomous occupational structure (white-collar, blue-collar, farm). Miller (1960) continued with outflow percentages, but rephrased the question to focus on mobility into the top of social orders. Fox and Miller (1965) used a crude measure of upward mobility; manual to non-manual outflow percentages. Blau and Duncan (1967) attempted to eliminate the effects of shifts in marginals by switching to mobility ratios yet continuing Miller's interest in national differences in short and long distance mobility. Cutright (1968) moved away from the previous concentration on upward mobility by summarizing the mobility revealed in four-fold tables with a series of Yule's Q's. Hazelrigg, who started in 1974 with outflow percentages, moved by his 1976 article with Garnier to Deming adjustments of marginals and a summary measure of the circulatory mobility within the adjusted tables.

In addition to a changing methodology, this literature has had a changing data base. Lipset and Bendix, together with Miller, used samples from 12 western European countries and countries of European settlement plus a sample of Russian emigrés to the United States. Blau and Duncan (1967) reduced the sample to 11 countries. By 1976 Hazelrigg and Garnier could feel fairly confident of expanding this data base to number 17 countries, considerably more variable both economically and culturally than the early samples had been.

Mobility As a Characteristic of a Social System

The explanations offered for cross-national differences in mobility, when such differences have been found, have invariably referred either to the level of

productive capacity or the political organization of nations. Either industrialization is seen to require the allocation of individuals to roles on criteria at least partially inconsistent with ascription, or political democracy has been seen as requiring widely perceived mobility opportunities for its maintenance. Circulatory mobility has not been taken to be influenced by characteristics of systems of social stratification themselves. We do not understand why this has been so.

There has been considerable recognition that short-distance mobility is more common than long-distance mobility. It would follow that in societies in which opportunities for short-distance mobility are limited, the total amount of circulatory mobility also would be limited.

We can think of societies in which social position is defined reasonably clearly along class lines, with two or three discrete classes having fairly uniform economic rewards available within each, but having substantial economic differences between them. The vertically mobile in these nations must leap large socioeconomic gaps in the structure. We can think of other societies where social gradations from the top to the bottom are numerous and small, each one being nearly indistinguishable, yet, when taken together, covering a substantial distance. The stratification system of such societies is a sort of social glissando. Vertical mobility can occur on a wide scale in small steps. Even when long distance upward mobility is attempted, possible outcomes are not limited to success or stagnation; the existing intermediate statuses provide alternative compromise destinations.

Circulatory mobility can be viewed as a zero-sum game. Net of movement forced by changes in the occupational structure over time and differential fertility, one's move up implies another's move down. The prospective cost of circulatory movement to the well born is notably greater in a two-class society than in a social glissando: to fall is to plummet. In such societies the upper class has serious reasons to protect lucrative positions from invasion from below. The power that can be bought with affluence and prestige is likely to be used to this end. In the social

glissando there is less motive for high status groups to attempt to block the upward movement of others, for the cost of downward moves of their own offspring is less. The ability to block others is probably also reduced. A glissando of affluence and status does not promote discontinuities in power.

For both of these reasons we expect the shape of a stratification system to influence the level of mobility occurring within that system. Since the shape of stratification systems, or degree of income inequality, will be seen to be associated with the level of productive capacity (GNP per capita), we shall have to consider the independent effects of both variables on mobility.

DATA AND PROCEDURES

Our data sources differ little from other recent studies of comparative mobility. There is a limited body of mobility studies from which any of us can assemble our samples. The choice of which are acceptable for analysis is partly dependent on the way the problem is phrased and partly dependent on a subjective sense of what is and what is not acceptably reliable. We are able to expand the list of 17 countries used by Hazelrigg and Garnier to 24, largely by restricting our analysis to mobility between white-collar and blue-collar segments of occupational structures. Thus urban samples are more acceptable to us than they were to them. We also have access to national studies of occupational mobility in Israel and Canada that were not available when Hazelrigg and Garnier did their work. We have chosen to be more restrictive than they by limiting ourselves to samples of males. We do not feel confident enough of a congruence within nations of the mobility experiences of men and women to mix single- and two-sex samples.¹

¹ Cell frequencies for West Germany were retrieved from Kleining's (1971) article by a roundabout procedure. Kleining presents only outflow percentages and column totals, but no row totals. Following an observation by Tyree (1973: 579), we used the outflow distributions to compute mobility ratios within Kleining's table, inverted this matrix, and summed the elements of the inverted matrix

Table 1. Countries with Available Data on Occupational Mobility, Year of Data Collection, Sample Size, and Coverage: Nonagricultural Males 25-64 of Nonagricultural Origins

Country	Year of Data Collection	Sample Size*	Coverage	Source
Australia	1965	1358	national	Broom & Jones
Belgium	1968	1331	national	Delruelle
Brazil	1950s	1054	Sao Paolo	Miller
Canada	1973	8950	national	McRoberts et. al.
Chile	1961	518	Santiago	Raczynski
Colombia	1968	875	Bogata	Simmons
Denmark	1954-5	2391	national	Miller
France	1964	...**	national	Garnier & Hazelrigg
Great Britain	1949	3498	England	Miller
Hungary	1962-4	4202	national	Andorka
Israel	1974	4428	national	Matras & Weintraub
Italy	1963-4	703	national	Lopreato
Japan	1955	1866	urban	Miller
Mexico	1963	730	Mexico City	Kahl
Netherlands	1954	2355	national	Miller
Norway	1957	447	national	Miller
Philippines	1968	8892	national	Bacol
Poland	1968	1417	urban	Zogorski
Puerto Rico	1950s	1785	territorial	Miller
Spain	1964	1086	national	FOESSA
Sweden	1950s	6542	national	Carlsson
U.S.A.	1962	23797	national	Blau & Duncan
West Germany	1969	9632	national & West Berlin	Kleining
Yugoslavia	1960	2172	national	Mellic

* Sample size after elimination of farm respondents where applicable.

** Only weighted sample size available. Total sample (all ages, both sexes) = 22,782.

The 24 countries in Table 1 vary considerably in type of government, level of economic development, and geographical location. As we shall see later, they also vary in income inequality. Data from the

across columns to obtain the row totals. There are other carefully executed mobility studies available that we have not included in our analysis, several dating from the 1950s. The reason for rejecting them here vary from case to case, largely being our own uncertainty of sampling procedures or dissatisfaction with the choice of population sampled. Most are from either European or South American cities. Since both of these areas are reasonably represented in Table 1, we do not feel the omissions to be serious. We do regret that we did not feel we could include Singh's (1972) data from Petaling Jaya, Malaysia or Tominga's (1970) from Bangkok. Petaling Jaya is a development town, inhabited almost exclusively by in-migrants. These migrants have experienced considerable spatial and occupational mobility; Singh acknowledges that their experience is not typical of Malaysians. Furthermore, in both samples the majority of fathers were farmers, reducing the sample size available for this analysis severely. In an analysis of farm-nonfarm intergenerational mobility both samples might be included profitably.

various surveys were collected idiosyncratically with investigators in each country resorting to occupational categories of use to them in their own work, but not necessarily of use to one wanting to compare the assembled data sets. This is a familiar problem to students of comparative stratification and mobility. The more detail one retains in a particular table, the less comparable it becomes to other tables. To the end of maximizing comparability, we have reduced the intergenerational mobility data from all countries to a series of four-fold tables: the white-collar/blue-collar status of respondents by the white-collar/blue-collar status of their fathers.

The highly aggregated nature of these resulting matrices eliminates potential problems arising from the small size of some of the samples. Use of 2 by 2 matrices also enables us, in a loglinear context, to obtain a unique estimate of mobility for each country—a possibility not so

readily available with more detailed origin and destination distributions.

Collapsing the original data to comparable blue-collar/white-collar categories on both the origin and destination variables, produces a three dimensional data matrix: 2 by 2 by 24. What we want of this matrix is a vector of estimates of the relative (to the other countries) odds in favor or against intergenerational mobility. Once we have it we shall be able to ask: To what is it related? To do this we must eliminate some known structural determinants of mobility as well as variability in sample size. The frequencies in each of the cells are functions of the size of each sample, the representation across the entire groups of countries of white- and blue-collar respondents, and the representation among their fathers of white- and blue-collar workers. A certain amount of mobility is forced by shifts in occupational distributions over time. This is partially represented by differences in the occupational distributions of father and respondents—all sons.

In addition, cell frequencies are functions of pairwise interactions of fathers' distributions and respondents' distributions, fathers and countries, and respondents and countries. To this point we have seven predictors of the cell frequencies: a grand mean (G); the marginal distribution of fathers (T_i^A), where $i = 1$ for white collar and 2 for blue collar; the marginal distribution of respondents (T_j^B); the 24 countries themselves (T_k^C); the interaction between the occupation of fathers and that of their sons (T_{ij}^{AB}); the interaction between the occupations of respondents and the countries in which they live (T_{jk}^{BC}); and countries in which their sons, the respondents, live (T_{ik}^{AC}).

These effects together predict a matrix of intergenerational mobility which would occur if the mobility processes of all the 24 countries worked the same way. Of course they do not all work the same way; some countries have more mobility than others. We can introduce the three-way interaction between father-respondent-country (T_{ijk}^{ABC}) to represent this greater or lesser experience of occupational mobility. At this point the model is saturated: The frequencies (F_{ijk}) in each of the 96

cells are exactly predicted. The model becomes:

$$F_{ijk} = G T_i^A T_j^B T_k^C T_{ij}^{AB} T_{jk}^{BC} T_{ik}^{AC} T_{ijk}^{ABC} \quad (1)$$

This is a multiplicative model. Expressed in the form of natural logarithms, it becomes additive. Our interest is with the estimates of T_{ijk}^{ABC} , the interaction term representing a particular country's relative propensity to occupational mobility. This term is a linear function of the logged odds ratios for each of the tables, the correlation between the two being 1.0.

The results of this exercise are presented in the first column of Table 2. The countries have been reordered from the alphabetical one in which they were presented in Table 1 to one based on their ranking by T_{ijk}^{ABC} , their relative mobility. Negative values mean greater mobility; positive ones, greater occupational inheritance. It is clear in this first column that nations do differ in the amount of intergenerational occupational mobility occurring in their populations. The most mobile populations are those of Israel, Canada, Australia and the United States. The least are those of Italy, the Philippines, Brazil, and Columbia.

Mobility and Economic Development

Lipset and Bendix, Cutright, Davis, and other past proponents of economic development, as either promoting occupational mobility or requiring it as a precondition, are supported by the mobility rates (lambda coefficients) in Table 2. These values are associated with GNP per capita in 1965 in the second column of Table 2. The correlation between these two variables is $-.601$. A certain interpretative distortion is created by relating observations about productive capacity at one time (1965) to findings about mobility processes at various times. The choice of 1965 GNP per capita does provide a simple way to measure productive capacity in constant dollars. The error entailed by not converting measures from varying dates to 1965 dollars cannot be great. GNP per capita is a fairly stable characteristic of nations across the limited period over

Table 2. Occupational Mobility Effects, Gross National Product Per Capita, Percent of Income Going to the Top Five Percent of Households, and the Percent of the Labor Force in Salaried Professional, Technical, Clerical, and Sales Occupations: 24 Countries

Country	Mobility Index	GNP/ Capita	% Income to Top 5%	% Salaried Prof., Technical, Clerical, and Sales
Israel	-.286	1422	13.0	33.4
Canada	-.184	2473	14.0	33.7
Australia	-.141	2002	14.3	28.5
U.S.A.	-.114	3575	16.0	27.7
Great Britain	-.102	1818	15.0	27.0
Hungary	-.068	1094	14.0*	17.9
France	-.056	1924	25.0	18.6
Sweden	-.045	2549	16.8*	27.5
Netherlands	-.041	1554	21.6*	24.7
Denmark	-.037	2120	16.2*	21.3
Yugoslavia	.003	451	15.0	11.7
Norway	.008	1890	15.0*	19.4
Puerto Rico	.013	1154	22.0	....
Belgium	.033	1804	....	25.9
Chile	.048	565	30.4	13.0
Japan	.048	861	20.0	18.5
Mexico	.051	455	32.1	13.4
Spain	.062	561	20.0	11.8
Poland	.067	978	13.9*	18.5
West Germany	.068	1901	31.2*	31.8
Italy	.081	1104	....	13.3
Philippines	.103	160	29.0	9.2
Brazil	.133	267	36.0	10.8**
Colombia	.356	282	39.4*	9.7

* The World Bank (Jain, 1974) does not provide household income distributions for these countries. The values for the Netherlands, Denmark, Sweden, Norway, West Germany, and Colombia were estimated from the regression of household measures on measures reported by the Bank for income recipients for all countries in the source with both variables available. The values for Hungary and Poland were estimated from the regression of household measures on those computed over workers in the same way. The Bank provides no data at all on the income distributions of Belgium and Italy.

** Total professional, technical and related workers plus total clerical and sales, as salaried population is not available.

which these mobility data were collected. The correlation between GNP per capita in 1957 and 1965 for the nations in this sample is a substantial .956 (sources: Russett, 1964; Taylor and Hudson, 1972).

The variance in GNP per capita is quite large ($X = \$1,373.50$, $s = \$864.02$), which is largely a consequence of the outlying positions (in 1965) of the United States on the upper end and the Philippines, Brazil, and Colombia on the lower. A logarithmic transformation of these values is associated quite as strongly with the mobility tau coefficients in Table 2 ($-.668$) as are the GNP values in their raw form. Where societies are successful at production, ascription loses force in the allocation of individuals to roles.

We cannot determine here a direction of causation, if there be any. Indeed, the autocorrelation of GNP per capita over time

is so high and the number of years between measured occupational origins and destinations so variable (even within any one sample) as to render the task of establishing direction intractable to us. It may be that economic development requires not only a base of natural resources and investment capital (the first generated either through the land itself or through the training of its inhabitants; the second either by individual investors, governments, or international capital transfers), but also a population conditioned to social mobility, a situation creating Reissman's inner- and other-directed men and women. Social mobility may be a precondition for development (see Davis, 1962).

Instead it may be that economic development creates conditions by which the bonds of social origins are relaxed; opportunities emerge for which no existing so-

cial group is uniquely prepared or toward which none is uniquely oriented. We have no way of choosing between these two possibilities.

It is probably more than accidental that the four most mobile societies in Table 2 (Israel, Canada, Australia and the U.S.) either are or have been in the remembered past home to unusually high proportions of immigrants. All four take some pride in their immigrant history. In the most occupationally mobile population, Israel, more than 60% of the labor force is foreign-born. Most of these immigrants were educated and got their first jobs in other countries.² High rates of immigration imply rapid population growth and, probably, more extensive social change than elsewhere.

The percent of a population native-born provides an inverse indicator of immigration. It is available in various *U.N. Demographic Yearbooks* (1964; 1971; 1973) for 20 of these populations (all but Belgium, Colombia, Italy and Japan). This measure is quite strongly related to the mobility coefficients ($r = .757$). With the extreme case of Israel dropped, over the remaining 19 countries, this remains a substantial $r = .693$.

The omission of Israel from the estimation of the association between GNP per capita and mobility raises that estimate to .700 and the association between log GNP per capita and mobility to .728.

These data provide support for the view of social mobility as related to economic productivity. In addition, the relative size of immigrant populations seems a potent correlate of social mobility. We shall return later to a consideration of the relationships among immigration, productive capacity, and social mobility. Next, however, we should like to direct ourselves to the importance of the shape of stratification systems for mobility.

² An alternative to these GNP values as an indicator of productive capacity is Gross Domestic Product per capita which is available in the *World Tables* (World Bank 1976) in constant 1967-69 dollars for all years since 1960. We were able to compute GDP per capita for the closest possible year to the survey date for 21 of the 24 populations. No appropriate data are available for Hungary, Poland, or Puerto Rico. With this reduced sample, mobility is correlated .664 with GDP per capita and .701 with its logarithm.

Inequality and Mobility

The third column of Table 2 presents the percent of income going to the top 5% of households in 22 of the 24 countries. These values are taken as close to the date of the mobility samples as possible from data supplied by the World Bank (Jain, 1974).³ No data on the income distributions of Belgium or Italy are available in this report. What these income differentials—or what wealth differentials—indicate is stratification; how much space is between those on the top and those on the bottom of a stratification system. The larger the percent of income going to the top 5% of households, the less is left to be divided among everyone else. Considerable care should be exercised in interpreting these numbers. The indexes for countries that have a large proportion of small families—typically wealthy, developed countries—are raised by this demographic fact. Kuznets (1976:87) expresses this effect clearly:

The smaller family or household usually receives a smaller income than the larger units, so that the family or household income for a one- or two-person unit is well below the countrywide mean. The proportion of such smaller units among all families or households is far greater in the developed than in the less developed countries—which contributes a much greater inequality component in the size distribution of family or household income in the developed than in the less developed countries.

Thus, for indicating how equally or unequally income is distributed to individual people, indexes for developed countries overstate inequality, while those for less developed countries understate it. Nevertheless, indicators of the size distribution of income provide a place to start thinking about the role of stratification in the process of development and in social mobility.

The correlation between the lambda coefficients in column 1 and the indexes of income inequality is .764. Where income

³ This working paper has since been published by the World Bank (Jain, 1975) with the same title and authorship as the working paper cited here. There are slight discrepancies in the two sources.

is more equally distributed, circulatory mobility is also greater. Where income differentials are greater, social origins are most powerful in determining social destinations.

Inequality is also related to productive capacity, with GNP per capita and income inequality being related by an $r = -.539$. We can entertain the hypothesis that both of these variables independently influence the rate of circulatory mobility. Here economic development creates a demand for an increasingly rationalized allocation of individuals to occupational roles, and relative equality of rewards creates the social conditions which reduce personal and family disruptions consequent to social mobility.

Unfortunately, the data do not provide strong support for this dual argument. In standard form (values in parentheses are standard errors),

$$\begin{aligned} \text{Mobility} &= -.288 \text{ GNP} \\ & (.163) \\ & + .609 \text{ Inequality}, \text{ with } R = .802. \\ & (.163) \end{aligned}$$

With GNP per capita transformed to its logarithm, this becomes,

$$\begin{aligned} \text{Mobility} &= -.301 \log \text{GNP} \\ & (.180) \\ & + .571 \text{ Inequality}, \text{ with } R = .798. \\ & (.180) \end{aligned}$$

In both of these equations the effect of productive capacity is about one and one-half times its own standard error, while the effect of inequality is both significant and substantively impressive.⁴

⁴ Using the GDP per capita measure reported in fn. 2 as an alternative indicator of productive capacity, we lose five cases; the three missing GDP/capita and the two missing income data. We gain temporal proximity of the measurement of productive capacity and mobility. The effect of inequality is still more substantial.

$$\begin{aligned} \text{Mobility} &= -.360 \text{ GDP} \\ & (.173) \\ & + .562 \text{ Inequality}, R = .821; \text{ and} \\ & (.173) \end{aligned}$$

$$\begin{aligned} \text{Mobility} &= -.372 \log \text{GNP} \\ & (.188) \\ & + .526 \text{ Inequality}, R = .816. \\ & (.188) \end{aligned}$$

What has previously appeared to be an association between mobility and industrialization or productive capacity appears to be a spurious consequence of the association of relative economic equality with both.⁵

Reward Structures and Occupational Structures

We have allowed a certain confusion between occupational structures and reward distributions. We have argued that circulatory occupational mobility is a function of the shape of occupational distributions. The availability of many middle-status jobs renders upward mobility easier. We then argue that mobility is a function of the shape of reward distributions; that the existence of an abundance of positions yielding a continuum of incomes renders potential downward movement less threatening and attempted upward movement more promising of at least some success. We have provided a test of the second argument by relating an index of the shape of income distributions to circulatory mobility.⁶ We have not provided any direct test of the first: we have only assumed that a glissando of positions and a glissando of rewards go together. We are better able to measure

⁵ One of the reviewers of this manuscript suggested our findings might be biased by our inclusion of one-city samples for the measurement of mobility. All four of the Latin countries are represented by only one city, while measures of their productive capacity and income distribution refer to the whole country, with these countries omitted, in standard form,

$$\begin{aligned} \text{Mobility} &= -.395 \text{ GNP} \\ & (.190) \\ & + .489 \text{ Inequality}, R = .698; \\ & (.190) \end{aligned}$$

$$\begin{aligned} \text{Mobility} &= -.367 \log \text{GNP} \\ & (.202) \\ & + .459 \text{ Inequality}, R = .678. \\ & (.202) \end{aligned}$$

⁶ All calculations reported in this article that include income to the top 5% of households were first run using both Gini coefficients and their logarithms. The findings are much the same, sometimes making our case weaker, sometimes making it stronger. Being unable to present all the various (interdependent) tests in one paper, we have chosen the presentation we feel to be more concise and more readily accessible.

the shape of reward distributions than the shape of occupational distributions. While we are not completely without resources for comparing occupational distributions, they are less than ideal.

Braverman (1974) argues that the working class includes, in addition to its usual incumbents, salaried professionals, technicians, clerical and sales workers. These are the middle status occupations that have proliferated to fill the center of the occupational structure in modern developed nations. The *Yearbook of Labor Statistics* (International Labor Office, 1973-1976) has included since 1963 data on major occupational distributions and class of worker. We have combined salaried professional, technical and related workers with salaried clerical and retail sales as a reasonably direct indicator of the size of the kinds of middle-level positions that can link the top to the bottom on an occupational hierarchy. These are expressed as a percent of the total labor force in column 4 of Table 2. Each calculation was made for a year as close to that of the relevant mobility survey as possible. Puerto Rico has been omitted as no appropriate data exist before 1976, which is two decades after the mobility survey.

What we ask of these data is whether the shape of occupational distributions can explain the relationship between industrialization and mobility as the shape of reward distributions has. The answer is an unequivocal, yes. Let us call the occupational variable in column 4, Midocc, in recognition of its intended capturing of the socially bridging middle status occupations. Then

$$\begin{aligned} \text{Mobility} = & -.067 \text{ GNP} \\ & (.251) \\ & -.686 \text{ Midocc} \quad , R = .740, \\ & (.251) \end{aligned}$$

$$\begin{aligned} \text{and Mobility} = & -.169 \log \text{GNP} \\ & (.270) \\ & -.598 \text{ Midocc} \quad , R = .745. \\ & (.270) \end{aligned}$$

Again the numbers under the regression coefficients are their standard errors. Even more decisively than before the evidence points to a social glissando, created

by occupational positions linking an elite at the top of a social order and the rest of the structure, as determining circulatory mobility. The originally observed relationship of mobility and industrialization must be concluded to be spurious.

An Alternative Class Line

Our argument has been largely a theoretical one. The evidence in its support is limited to circulatory mobility across a supposed white-collar/blue-collar line. We have established that this line is weaker where reward and occupational distributions are relatively continuous than where they are discontinuous.

There is reason to suspect a white-collar/blue-collar distinction as the crucial basis of class definition in most societies. We argue that social glissandos are inconsistent with the intergenerational transmission of class. We must be willing to draw hypothetical class lines anywhere in the social hierarchy. We should like to be able to measure circulatory mobility between capitalists and everyone else, for this would be responsive to a conviction within the social sciences of a persistence, even in modern post-industrial societies, of class membership based on ownership and control of the means of production. The data available to us are not adequate to this task.

We can ask whether the shape of the social structure is more important than economic development in explaining mobility between farm and nonfarm sectors of labor forces. There are reasons more persuasive than habit to suggest this as a relatively impenetrable line in occupational structures (Blau and Duncan, 1967: chap. 2). Farmers and nonfarmers tend to be separated in space more than are white- and blue-collar workers.

We can estimate circulatory mobility across this line for a subsample of 13 of the populations in Table 1 the same way the estimates of white-collar/blue-collar mobility were made. Since men in agricultural destinations or from agricultural origins were eliminated from the previous analysis, this measure of mobility is logically independent of the one in Table 2.

The variable mobility now refers to the

3-way interaction term saturating the log-linear model of the 2 by 2 by 13 matrix of men of farm-nonfarm origins and destinations in 13 countries (or the logs of the odds ratios in each 2-dimensional matrix). Estimated for these 13 populations alone,

$$\text{Mobility} = .011 \text{ GNP} + .756 \text{ Inequality,} \\ (.224) \quad (.224)$$

$$\text{and Mobility} = -.123 \log \text{GNP} \\ (.227) \\ + .715 \text{ Inequality.} \\ (.227)$$

Inequality is again the percent of income going to the top 5% of households. It alone determines farm-nonfarm mobility in this sample. The effect of industrialization or productive capacity is far less than its standard error. Though the sample is regrettably small, it appears that what draws men off farms or onto them from nonfarm origins is not the affluence of their countries but the shape of the reward distributions within them.

Mobility and Immigration

Earlier in this paper we noted that the countries with the most mobility were countries with histories of unusual immigration. We reported a correlation of .757 between the mobility coefficients and the percent of populations native-born. We promised to return to consider the importance of immigration for social mobility.

This importance is well documented in the United States, where each new immigrant wave has pushed earlier arrivals up the social structure. Except in the Northeast, persons of native birth have never been preponderant among factory workers (Gutman, 1979). They have been pushed up by immigrants who took the factory jobs. Other societies which have been major recipients of immigrants seem to have functioned in much the same way.

Immigrants enhance measured mobility in recipient countries in two ways. First, separated from their communities of origin, the status of their parents is weakened as a predictor of their destinations. Second, typically entering nearer the bottom than the top of the social orders to which they move, immigrants push natives up by

increasing the size of the population and the productive capacity of the economy.

We all recognize that immigrants are attracted by countries of opportunity. It has not been clear what "opportunity" means to an immigrant—whether it is wealth (as GNP per capita) or the availability of a social ladder with many little rungs, a ladder one might reasonably expect to climb. The evidence in these 24 countries is not that immigrants are drawn to industrialization or high GNP per capita ($r = -.189$) so much as they are drawn to social glissandos. The correlation between percent native-born and the percent of income going to the top 5% of households is .354, its correlation with the Midocc variable is $-.591$.

Assessing the causal structure of these four variables—inequality, industrialization, immigration, and circulatory mobility—is beyond the scope of this paper.

DISCUSSION I: INTER- AND INTRAGENERATIONAL MOBILITY

The cross-national intergenerational mobility data assembled here have supported our expectations. On the theoretical grounds which directed us, we should have to expect inequality to be similarly related to *intragenerational* mobility. There is some reason to think that this prediction might not fare well if confronted with appropriate data.

We know that, across individuals in one society, intergenerational and career mobility are negatively related.⁷ Those who

⁷ Whether the correlation between inter- and intragenerational mobility is negative or positive in a particular society is dependent on the relative magnitude of three zero-order correlations. The mobility correlation can be estimated as follows. Where X = social origins, W = career beginnings, and Y = social destination,

$$r_{(Y-X)(Y-W)} = \frac{1 - r_{YW} - r_{YX} + r_{WX}}{\sqrt{2(1 - r_{YX})(1 - r_{YW})}}$$

This reduction of the mobility correlation assumes that the variances of the three status variables are equal. To the extent that they are not, this estimate will be in error. As a practical matter, the error is not great. It is clear from this simplification that only in a

move far from their social origins to their career destinations do not tend to be the same persons who move up from their career beginnings. For those assuming the higher status positions in modern society, most enter the occupational structure in high status positions after lengthy education, whatever their social origins. This does not necessarily mean, however, that indicators of levels of inter- and intragenerational mobility for societies need be expected to be negatively related.

There are other reasons that should lead us to expect the negative relationship. Goldthorpe (1966:654) reasoned "to the extent that education becomes a key determinant of occupational achievement . . . an increased rate of *intergenerational* mobility in advanced societies is likely to be associated with some limitation of *intragenerational* or 'career mobility.'" To Goldthorpe it is not that inter- and intragenerational mobility are incompatible, but that an increasing importance of education for role allocation leads the larger part of intergenerational mobility to be accomplished by the point of entry into the labor force. It is efficient for societies to adjust to changing occupational structures with a succession of differentially trained cohorts. It is not so efficient to retrain and promote existing labor, for the return on the training investment is less.

The intergenerational mobility we have addressed here is the sum of two steps; movement from origins to career beginnings and from career beginnings to social destinations. We have found the shape of the structure of rewards to be related to the total movement. We have not established how it is related to either of the two pieces in that movement. If a social glissando promotes mobility through its potential of many little steps; we should expect to find the mobility whether it be measured between parent and child or within an adult career. There are grounds to suspect that, had we appropriate data, we would not find the second.

society with a rather strong association between origins and career beginnings (r_{wx}) and relatively weak intragenerational (r_{vw}) and intergenerational (r_{vx}) associations, could the mobility correlation have a positive sign.

DISCUSSION II: POLITICAL DEMOCRACY

While we did not set off to study political democracy, our data analysis has drawn us to a literature on the relationship between economic inequality and political democracy. We have focused on the relationships among productive capacity (or economic development), inequality, and mobility. We have viewed mobility as a consequence of inequality and productive capacity. Most recent sociological work on cross-national differences in inequality have been uninterested in social mobility, but quite concerned with the effects of political democracy. The concern has been with understanding the structure of relationships (and the direction of causation) among political democracy, economic development, and inequality. By arguing that social mobility is an orderly function of two of these variables, we necessarily raise the question of how it might be related to the third, and how all four might be related to one another.

Lenski (1966) argued that political democracy reduces income inequality. Cutright (1968) addressed this hypothesis with data and was unable to reject it. Even after controlling for the level of economic development, he found political democracy and income inequality to be negatively related. Jackman (1974) did reject Lenski's hypothesis, finding net of economic development, no relationship between democracy and inequality. To Jackman economic development was the driving force; both democracy and equality were consequences.

Rubinson and Quinlan (1977) try to reconcile the differences between Cutright and Jackman. They devote much of this article to issues of scaling, which lead them to concur with Cutright and Lenski: Political democracy is related to personal income inequality even after economic development is controlled. They then attempt to reverse the direction of causation, arguing that democracy does not determine inequality, inequality determines democracy. In this argument they anticipate much of the reasoning that led us to view inequality as the potential determinant of social mobility in the early part of this paper. They see income inequality as

indicative of the class structure of a society and the class structure as determining the political order.

Thus, when we compare countries on inequality, basically we are comparing their class structures and, particularly, the degree to which they are dominated by a middle class. It is interpreting inequality as an indicator of class structure that leads to the hypothesis that social inequality affects democratization. (Rubinson and Quinlan, 1977:616)

We have argued that equality leads to mobility. Rubinson and Quinlan (1977) find relative economic equality leads to political democracy. We all conclude that the influence of economic development on either political democracy or social mobility is weaker than the influence of inequality.

To students of politics, the shape of the social structure has consequences for the way a society governs itself, the ways decisions are made. To us as students of social mobility, the shape of the social structure influences the degree to which ascription governs occupational role attainment. Both the way a society makes its decisions (democratically or otherwise) and the way it transmits roles from one generation to the next are determined by social structure. Social glissandos have both more political democracy and less continuity of status across generations.

There is a basic difference in the way Rubinson and Quinlan and we interpret what we find. To Rubinson and Quinlan the effect of inequality is taken as evidence of the importance of a relatively affluent and politically powerful middle class. They view social orders as structures of classes. We interpret the effect of inequality we find as evidence of the unimportance of class or, phrased differently, the importance of having a social structure so continuous that classes are not identifiable.

In one sense the difference in interpretation between us is unimportant; we are both asserting the shape of the social structure to be influential for social processes. In another sense the difference is important in that we see different things about the shape of the social structure as having these consequences.

Rubinson and Quinlan (1977) do not

provide any evidence that where economic inequality is low there exists a middle class which dominates the society politically (see their discussion on p. 616). Our findings do provide some evidence that where inequality is low it is unlikely that coherent classes exist, at least with identifications strong enough that they are reinforced by the kinship system, either intergenerationally, as between parents and children, or intragenerationally, as between siblings. Thus we are inclined to reinterpret the findings of Rubinson and Quinlan: Political democracy is not dependent on a strong middle class, but on weak classes.

In recent years the study of social mobility has progressed rapidly in sociology; the study of social stratification has not. We are not happy at having had to resort to an index of the size distribution of income to measure the shape of social hierarchies, just as both Cutright and Jackman regretted having to use sectoral income inequality as their measure. We do not think—and do not want to imply that we do—that income distributions define social stratification. We are aware that societies also differ in their distributions of wealth, political power, bureaucratic authority, and prestige. Any measure of income inequality (Gini coefficients, Kuznets indexes, income to the top 5%, the third quintile, etc.) can only provide a crude approximation of a social hierarchy. Though the measurement is not conceptually satisfactory, it has been of practical use in this research. The shape of a stratification system has consequences for the level of intergenerational circulatory mobility through the system.

REFERENCES

- Andorka, R.
1971 "Social mobility and economic development in Hungary." *Acta Oeconomica* 7:25-45.
- Bacol, M. M.
1971 "Inter-generational occupational mobility in the Philippines." *Philippine Sociological Review* 19:193-208.
- Baltzell, E. D.
1958 *Philadelphia Gentlemen*. Glencoe: Free Press.
- Blau, P. M. and O. D. Duncan
1967 *The American Occupational Structure*. New York: Wiley.

- Braverman, H.
1974 *Labor and Monopoly Capital*. New York: Monthly Review Press.
- Broom, L. and L. Jones
1969 "Father to son mobility in Australia in comparative perspective." *American Journal of Sociology* 74:333-42.
- Carlsson, G.
1958 *Social Mobility and Class Structure*. Lund: Gleerup.
- Cutright, P.
1968 "Occupational inheritance: a cross-national analysis." *American Journal of Sociology* 73:400-16.
- Davis, K.
1962 "The role of class mobility in economic development." *Population Review* 6:67-73.
- Delruelle, N.
1970 *La Mobilité Sociale en Belgique*. Bruxelles: Université Libre de Bruxelles.
- FOESSA
1970 *Informe Sobre la Situación Social de España*. Madrid: Edicusa.
- Fox, T. G. and S. M. Miller
1965 "Economic, political and social determinants of mobility: an international cross-sectional analysis." *Acta Sociologica* 9:76-93.
- Garnier, M. and L. E. Hazelrigg
1974 "Father to son occupational mobility in France: evidence from the 1960s." *American Journal of Sociology* 80:478-500.
- Glass, D. V. (ed.)
1954 *Social Mobility in Britain*. London: Routledge and Kegan Paul.
- Goldthorpe, J. H.
1966 "Social stratification in industrial society." Pp. 648-59 in R. Bendix and S. M. Lipset (eds.), *Class, Status, and Power*. 2nd ed. New York: Free Press.
- Gutman, H.
1979 "Immigration and the American working class experience." Paper presented at the Conference on Culture and Community Among New York Jews. YIVO, Institute Research Program on Jews. New York.
- Hazelrigg, L. E. and M. A. Garnier
1974 "Cross-national comparison of father-to-son occupational mobility." Pp. 469-93 in J. Lopreato and L. S. Lewis (eds.), *Social Stratification: A Reader*. New York: Harper.
- Hazelrigg, L. E. and M. A. Garnier
1976 "Occupational mobility in industrialized societies: a comparable analysis of differential access to occupational ranks in seventeen countries." *American Sociological Review* 41:498-511.
- International Labor Office
1963- *Yearbook of Labour Statistics*. Geneva: International Labor Office.
1976 *International Labor Office*.
- International Sociological Association
1951 *First National Working Conference on Social Stratification and Social Mobility*. London: International Sociological Association.
- Jackman, R. W.
1974 "Political democracy and social equality." *American Sociological Review* 39:29-45.
- Jain, S.
1974 "Size distribution of income: compilation of data." Bank Staff working paper, No. 190. Washington, D.C.: International Bank for Reconstruction and Development.
1975 *Size and Distribution of Income: A Compilation of Data*. Washington, D.C.: World Bank.
- Kahl, J. H.
1968 "The measurement of modernism: a study of values in Brazil and Mexico." Austin: University of Texas Press.
- Kleining, G.
1971 "Struktur- und Prestigemobilität in der Bundesrepublik Deutschland." *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 23:1-33.
- Kuznets, S.
1976 "Demographic aspects of the size distribution of income." *Economic Development and Cultural Change* 25:1-94.
- Lenski, G.
1966 *Power and Privilege*. New York: McGraw-Hill.
- Lipset, S. M. and R. Bendix
1959 *Social Mobility in Industrial Society*. Berkeley: University of California Press.
- Lopreato, J.
1965 "Social mobility in Italy." *American Journal of Sociology* 71:311-4.
- McRoberts, H. A., J. Porter, M. Boyd, J. Goyder, F. E. Jones, P. C. Pineo
1976 "Différences dans la mobilité—professionnelle des francophones et des anglophones." *Sociologie et Sociétés* 8:61-79.
- Matras, J. and D. Weintraub
1977 "Ethnic and other primordial differentials in intergenerational mobility in Israel." Jerusalem: Brookdale Institute.
- Mellic, V.
1965 "General trends in social mobility in Yugoslavia." *Acta Sociologica* 9:116-36.
- Miller, S. M.
1960 "Comparative social mobility: a trend report and bibliography." *Current Sociology* 10: Vol. 1.
- Raczynski, D.
1970 *Occupational Mobility and Occupational Achievement in Santiago de Chile*. Ph.D. dissertation, Department of Sociology, University of California, Los Angeles.
- Rogoff, N.
1953 *Recent Trends in Occupational Mobility*. Glencoe: Free Press.
1951 "Recent trends in urban occupational mobility" Pp. 432-45 in P. K. Hatt and A. J. Reiss (eds.), *Cities and Society*. Glencoe: Free Press.
- Rubinson, R. and D. Quinlan
1977 "Democracy and social inequality: a

- reanalysis." *American Sociological Review* 42:611-23.
- Russett, B. M.
1964 *World Handbook of Political and Social Indicators*. New Haven: Yale University Press.
- Simmons, A. B.
1975 "Social mobility in Bogota, Colombia." *International Journal of Comparative Sociology* 16:228-45.
- Singh, S.
1972 *Education and social mobility in Malaysia: a case study of Petaling Jaya*. Ph.D. dissertation, Department of Sociology, University of Malaysia, Singapore.
- Sorokin, P. A.
1927 *Social Mobility*. New York: Harper.
- Taylor, C. L. and M. C. Hudson
1972 *World Handbook of Political and Social Indicators*. New Haven: Yale University Press.
- Tominga, K.
1970 "The modernization and industrialization of Thai Society." *East Asian Cultural Studies* 9:2-24.
- Treiman, D. J.
1970 "Industrialization and social stratification." Pp. 207-34 in E. O. Laumann (ed.), *Social Stratification*. Indianapolis: Bobbs-Merrill.
- Tyree, A.
1973 "Mobility ratios and association in mobility tables." *Population Studies* 27:577-88.
- United Nations, Department of Economic and Social Affairs
1964, *Demographic Yearbook*. New York:
1971 United Nations.
- World Bank
1976 *World Tables, 1976*. Baltimore: Johns Hopkins University Press.
- Zagorski, K.
1971 "Social mobility in Poland." *Polish Sociological Bulletin* 24:5-16.

CENTRAL CITY WHITE FLIGHT: RACIAL AND NONRACIAL CAUSES*

WILLIAM H. FREY

University of Wisconsin, Madison

American Sociological Review 1979, Vol. 44 (June):425-448

Although residential "white flight" from large central cities is hardly a new phenomenon, its cumulative adverse impact on the residual population has led policy makers to be wary of instituting programs which will further exacerbate the process. Recent policy debates have evolved over the question of whether white city-to-suburb movement is affected more significantly by racially-motivated causes, or by conditions associated with the general economic and ecological conditions in the city. The present study assesses a number of previously suggested factors related to race, central city decline, and demographic structure as determinants of the white city-to-suburb movement streams in 39 large SMSAs. Treating this stream as a product of two separate mobility stages, this analysis suggests that most factors, both racial and nonracial, affect central city flight less through the decision to move, than through the choice of destination. Fiscal and ecological features of the metropolitan area are demonstrated to be important in the explanation. However, racial effects cannot be dismissed.

INTRODUCTION

Neither the residential "flight" of whites from large central cities to their expansive suburbs nor the adverse consequences of this movement for remaining city residents are particularly new phenomena. Shortly after white suburbanization peaked in the 1950s, Grodzins (1958:1) in a perceptive essay noted:

Almost nothing is being done today to meet what is likely to be the nation's most pressing social problem tomorrow. The problem can be simply stated in all its bleakness: many central cities of the great metropolitan

areas of the United States are fast becoming lower class, largely Negro slums.

Since that time, evidence has tended to confirm that the cumulative redistribution of white residences and jobs out of the urban center has led to a lower quality of life for the minorities and poor left stranded in the core (Kain, 1968; National Advisory Commission on Civil Disorders, 1968) as well as to fiscal crises for many central city governments (Advisory Commission on Intergovernmental Relations, 1973). Although various public policy measures have effected modest gains in improving the living conditions of the urban poor (deLeeuw et al., 1976), one can hardly be complacent when 1977 figures show that 62% of the metropolitan poor live in central cities, and 45% of these live in low income neighborhoods (U.S. Bureau of the Census, 1978).

The fiscal crisis in city governments according to many experts has not yet reached its peak, particularly in older metropolitan areas (Pettengill and Uppal, 1974; Peterson, 1976). At present, the residents of financially strapped cities are faced with prospects of increased taxes, lower levels of service and, for those dependent on local government jobs, higher unemployment. Recent trends toward diminished federal contributions to the city's plight portend a bleak future. In light

* Address all communications to: William H. Frey; Center for Demography and Ecology; 3224 Social Science Building; 1180 Observatory Drive; University of Wisconsin; Madison, WI 53706.

This research is supported by grant R 01 HD10666-01, "Migration and Redistribution: SMSA Determinants," from the Center for Population Research of the National Institute of Child Health and Human Development, and in part by the Institute for Research on Poverty, University of Wisconsin, Madison. I want to thank Karl E. Taeuber and Franklin D. Wilson of the Sociology Department, Katherine Bradbury of the Brookings Institution, Avery M. Guest of the University of Washington, and Christine H. Rossell of Boston University, for their suggestions and reactions to this paper at various stages of its development. I am also grateful to Karl and Alma Taeuber for making available school segregation indices for central city school districts and to Seymour Spilerman for making available his data on racial disturbances.

of this situation, it becomes apparent that central cities can ill afford to sustain further reductions in their nonpoor, non-minority populations.

It is small wonder then that various policy proposals aimed at lowering unemployment or achieving greater racial equality are carefully evaluated according to their potential impact on further white flight. The ghetto enrichment strategy spawned by the Kerner Commission report has been held up to such scrutiny (Kain and Persky, 1969; Harrison, 1974). More recently, the white flight implications of enforced school desegregation policies have become the focus of debate (Coleman et al., 1975; Farley, 1976a; Orfield, 1976; Pettigrew and Green, 1976a; 1976b; Coleman, 1976a).

In such debates, conventional wisdoms often get substituted for empirical evidence. One such conventional wisdom suggests that current white flight is still influenced by racial motivations (assuming that it had been during the 1950s) and that policies which would increase either the numbers or level of integration of blacks within the city will lead to a further loss of whites. An alternative explanation suggests that present flight to the suburbs is a consequence of the continued expansion of the metropolitan community which includes the dispersion of jobs and housing as well. Given the relatively static boundaries of the central city, past movements of nonpoor individuals toward greater housing and job opportunities in the suburbs have led to even further deterioration of the economic and environmental conditions within the city political unit (Bradford and Kelejian, 1973). Each explanation implies different flight consequences for proposed policies, leaving proponents and critics of a policy free to embrace the explanation which best supports their cause. Unfortunately for urban analysts, no empirical study using recent data has yet been undertaken which disentangles competing explanations of white city-to-suburb mobility. This is the purpose of the present investigation.

White Flight: Postwar and Present

A reasonable case can be made that the suburban flight of whites which occurred

immediately after World War II resulted in part from racial motivations. There is general agreement that the unprecedented levels of postwar suburbanization were mitigated by a unique set of economic and demographic circumstances which produced a heightened demand for housing, matched later by increased rates of suburban construction (Duncan, 1962; Glenn, 1973). However, available evidence also suggests that racially motivated movement patterns and discriminatory housing practices, when superimposed upon market forces of the period, served to exacerbate the selective mobility of whites to the suburbs. A facilitating factor in this regard was the substantial increase in black migration from the rural South to northern cities which took place in the 1940s (Hamilton, 1964). The large numbers of black in-migrants exerted even greater pressures on an already tight wartime housing market, and their relegation to exclusively black neighborhoods contributed to further piling-up in these areas.

After the war, the increased availability of suburban housing permitted an outward movement of central city whites as well as an expansion of blacks into previously white neighborhoods. Linkages between these two processes for cities which had undergone both black increases and white decreases in population are suggested in the Taeuber and Taeuber (1965a) study. Their data document a fairly systematic racial transition process wherein affected city neighborhoods experienced both black population increases and white decreases. Newly-invaded neighborhoods tended to be middle-class in character, and the black "invaders" were often higher in status than resident whites. An analysis of vacancy patterns and white resident characteristics suggests that the suburbanward movement of high status whites came disproportionately from invaded and partially black neighborhoods rather than all-white areas of the city.

Although these data do not indicate the existence of a widespread racially-induced flight consistent with common conceptions of neighborhood tipping or "blockbusting," a more subtle racial effect is suggested. The high level of mobility on the part of white city residents

could be attributed largely to a pent-up housing demand rather than a response to black in-migration. However, the overwhelming selection of all-white destination neighborhoods—located primarily in the suburbs—by these movers can be viewed as a discriminatory process. As the Kerner Commission put it:

“Massive transition” requires no panic or flight by the original white residents of a neighborhood into which Negroes begin moving. All it requires is the failure or refusal of other whites to fill the vacancies resulting from normal turnover. . . . (National Advisory Commission on Civil Disorders, 1968:245)

Since both market and nonmarket discriminatory practices effectively guaranteed to movers all-white neighborhoods in the suburbs, an undeterminable portion of white postwar suburbanization can be attributed to racial motivations on the part of individual movers and to more pervasive discriminatory housing policies on the part of both public and private agencies (Foley, 1973; Taeuber, 1975a).

Despite the continuing persistence of residential segregation and increases in the proportion of city blacks through the 1960s (Taeuber, 1975b; Schnore et al., 1976; Frey, 1978b), it is not likely that recent white out-movement from large central cities is as heavily influenced by interracial housing dynamics as had been the case in the 1950s. To begin with, the unique housing market situation which facilitated widespread racial transition during the postwar period has not been repeated in large central cities. Second, the nature of black migration has changed dramatically. Over the past two decades, black-recipient cities have come to experience lower levels of black net in-movement, greater diversity of origins among in-migrants, and higher status selectivity among in-migrants from all origins than in the 1940s and early 1950s (Taeuber and Taeuber, 1965b; Manpower Report of the President, 1974; Farley, 1976b). These trends tend to slow the pace of neighborhood transition and decrease the status disparity between black and white city residents. Third, there has been a change in white attitudes toward racial residential integration. According to re-

cent surveys, a majority of whites now endorse such integration at least in principle (Pettigrew, 1973; Hermalin and Farley, 1973). Finally, as a result of continuing suburbanization over the past three decades, a major portion of metropolitan whites already has been relocated into highly segregated suburban communities leaving behind those who either prefer a city residence or are unable to afford the move. Recent analyses have demonstrated that residential segregation at the metropolitan level exceeds that within the central city per se (Sørensen et al., 1975; Farley, 1976b; 1977).

It is conceivable that attempts to desegregate central city schools could provide a motivation for suburban flight similar to that generated by the neighborhood transition process. However, the overall impact of such movement is likely to be minimal if only because of the limited subpopulation affected (i.e., city whites with school-age children in public schools). Furthermore, available evidence suggests that school-induced flight, unlike the widespread residentially-induced flight of the 1950s, is not tied to community housing market mechanisms which influence population redistribution patterns (Farley, 1976c; Snyder and Kelly, 1977).

A strong argument can be made that *current* white flight is largely a response to deteriorating economic and environmental conditions within central cities. These deteriorating conditions reflect an increased isolation of the political central city from activities and resources in the larger metropolitan community—the cumulative result of population, housing, and employment expansion outside the city limits into a fragmented suburban political structure (Zimmer, 1975). In the process, the central city effectively has been stripped of the metropolitan area's high income population and a good deal of its industrial tax base. At the same time, it is still obliged to provide a host of nonresidential services which benefit workers, shoppers and visitors who reside in the suburbs, and to cater as well to the special needs of a large, poor and disadvantaged population within its own boundaries (Hirsch, 1971).

Suburban jurisdictions, in contrast, are

primarily dispensers of residential services (most notably, education), serve the needs of a more middle-class population, and can therefore impose less severe demands on their taxpayers, who are generally better off on an income per capita basis than city taxpayers. Intergovernmental transfers have served to moderate city-suburb disparities to some extent but far from completely (Advisory Commission on Intergovernmental Relations, 1973: Appendix B). Moreover, almost every attempt at city annexation or government reorganization within affected metropolitan areas has met strong opposition from suburban communities (Zimmer, 1976).

The implications of this city-suburb disparity for residential movement are plain. City residents of the most severely affected areas are being asked to pay higher taxes both on a per capita basis and as a share of total income than are their contemporaries in the suburbs. In return, they are not likely to receive proportionately better services and, in fact, can be virtually assured of lower quality schools and higher rates of crime than suburban residents (Peterson, 1976). It is likely, therefore, that the increased out-of-pocket costs and deteriorating environmental conditions associated with residence in financially plagued cities will provide additional impetus for suburbanward movement. Furthermore, city-suburb disparities have effected an aggregate relocation of employment opportunities out of the central core (Noll, 1970). In the 1960-70 period, decentralization has been particularly selective of blue-collar employment (Kasarda, 1976). Since proximity to workplace has been shown to bear some relation to residential location (Kain, 1965; Guest, 1976), the recent redistribution of employment opportunities well may induce further residential redistribution of blue-collar whites who have previously lived and worked in the central city.¹

¹ The expected increase in white city-to-suburb movement is a corollary of the so-called mismatch hypothesis. Put simply, this hypothesis suggests that the increasing suburbanization of blue-collar jobs and central city concentration of white-collar jobs

Hypotheses

This investigation will attempt to clarify the roles of factors that have been proposed to account for the current suburbanward movement of central city whites. In particular, we are interested in juxtaposing racially related flight effects with those that are associated with overall central city decline.

Findings in this study are based on a cross-sectional multivariate analysis of the white city-to-suburb movement stream for 39 large metropolitan areas as reported in the 1970 U.S. census. Although we are mindful of the fact that population change is the net of various mobility and migration streams in addition to natural increase (fertility-mortality), the focus on this single stream is consistent with policy makers' concerns over continued residential relocation of the existing central city population to other communities within the metropolitan area.² From an empirical standpoint, this stream represents a significant component of white population change in the largest

creates a mismatch between the skill levels of central city residents and available employment opportunities. A major consequence of this process is expected to be increased unemployment for city blacks who effectively are barred from relocating in a suburban residence. For blue-collar whites in the city, a suburbanward move becomes an expensive, but viable option. (See Harrison, 1974, for a discussion and critique of the mismatch hypothesis.)

² The movement streams which contribute to central city population change can be distinguished, analytically, between: (1) in- and out-migration streams which lead between the central city and points outside the metropolitan area; and (2) intrametropolitan suburb-to-city and city-to-suburb residential mobility streams (see Frey, 1978a). Although the former streams can contribute substantially to city population gains or losses, their magnitudes are generally influenced by metropolitan-wide employment and labor market factors. Of more concern to urban analysts and policy makers is the increasing deterioration of the central city viz its suburban communities with respect to social, economic, and other residential environment factors that serve to retain or attract movers from within the metropolitan area. Given that the size of the city-to-suburb residential movement stream is generally far greater than that of its counterstream in large declining cities (Taeuber and Taeuber, 1964; Tarver, 1969; Farley, 1976b), much attention has been given to isolating those factors which may promote a further out-movement of existing city residents.

central cities. Twenty-three of the 39 metropolitan areas in the analysis experienced central city white (nonblack) population losses over the 1960-70 period. Among these, the 1965-70 city-to-suburb stream (as can be determined from the 1970 census) accounted for, on the average, 77% of those losses. Moreover, among all 39 metropolitan areas, there exists a $-.82$ zero-order correlation between 1960-70 white central city population change and the size of the 1965-70 city-to-suburb stream (U.S. Bureau of the Census, 1973a; 1973b).

In proceeding with the analysis, we are guided by two underlying hypotheses. First, *we expect that current white flight can be accounted for largely by the deteriorating economy and social environment of the central city rather than by factors which are directly related to race.* Changes that have taken place since the immediate postwar years in the housing market, the nature of black migration, white attitudes toward racial integration, and the characteristics of central city residents, point to a diminishing racial effect on white suburbanward movement levels. The impetus for flight from today's central cities is more apt to be linked to deteriorating conditions in the central core which have accompanied the city's increased demographic and political isolation from the broader metropolitan unit. This position is supported by aggregate post-1960 statistics which indicate a continuing suburbanization of central city whites despite a sharp curtailment of black in-migration from 1950 levels (Long, 1975; Taeuber, 1972).

Our second hypothesis concerns the term *flight* as a characterization of the movement. Previous studies of residential mobility indicate that there are a variety of factors responsible for precipitating a local move, and further, that these factors tend to coincide with major life-cycle stages of the household (Rossi, 1955; Goodman, 1974; Speare et al., 1975). It is therefore reasonable to expect that selective white movement out of increasingly black central cities takes place as part of the destination selection process *after* the decision to move is made. This view of

white residential movement has been given support in the neighborhood racial transition literature, and it can hardly be characterized as flight. Hence, *we anticipate that racial influences on city-to-suburb movement, to the extent they exist, will operate primarily in the destination selection process.*

The test of the first hypothesis will permit a comparison of various race-related and non-race-related effects on white city-to-suburb movement levels, whereas the test of the second will give insights into how these effects are transmitted. A confirmation of the second hypothesis and not the first would imply that the implementation of racially sensitive policies will not evoke an immediate suburbanward flight but that the mobility consequences for such policies would be more gradual and long-term. A confirmation of both hypotheses should serve to moderate those arguments which suggest that racial influences significantly raise current levels of white city-to-suburb movement.

THE MODEL

To evaluate causes of white flight in terms of the hypotheses raised, we employ a general model of intraurban residential mobility which has been used elsewhere (Frey, 1978a; 1978b; 1978c; 1979). The model is based on the assumption that individual movement can be viewed as the outcome of two distinct stages: (1) the decision to move, and (2) the choice of destination. Although more elaborate conceptions of the residential mobility process have been advanced (Brown and Moore, 1970; Speare et al., 1975), this decomposition into two separate stages has proven to be an effective analytic device in a national study of moving behavior which found that different sets of explanatory factors can be related to each stage (Butler et al., 1969). Moreover, the two-stage analysis is superior to one which treats mobility *from* an origin *to* a destination as a single event since the former allows identification of causal factors at each stage and permits the researcher analytically to separate "pushes" from "pulls."

The aggregate-level counterpart to the individual two-stage mobility model suggests: first, that within a geographically delimited population (e.g., central city), a pool of movers will evolve over the course of a time interval; and second, that some proportion of these movers will select a destination outside the geographically delimited area (e.g., suburb destination). It is possible, therefore, for different community-level factors to be associated with the size of the mover pool—or the incidence of mobility among *residents* in the community—than are associated with the propensity of *movers* to select a destination outside the community. This distinction is important for testing our second hypothesis that racial factors will be less apt to motivate mobility per se than influence the selection of suburban destinations for central city whites.

Migration measures for both stages of the 1965–70 white (nonblack) city-to-suburb movement stream are estimated from 1970 census data for 39 SMSAs (Standard Metropolitan Statistical Areas) with single central cities and with populations greater than 500,000 (listed in Appendix C). This focus on the nation's largest metropolitan areas is predicated on aggregate trends, showing that it is the central cities of SMSAs in this size class which have experienced greatest levels of white population loss since 1960 (U.S. Bureau of the Census, 1971; 1978; Taeuber, 1972). It is also consistent with research on school enrollment declines which suggests that racially linked white flight is most apt to occur in the largest cities (Coleman et al., 1975). Seven metropolitan areas which would otherwise qualify for inclusion in this study (Honolulu, Hawaii, Jacksonville, Fla., Miami, Fla., Salt Lake City, Utah, San Antonio, Texas, San Diego, Calif., Washington, D.C.) had to be eliminated because a large share of the male labor force was in the armed forces, sufficient migration or independent variable information could not be obtained, or extensive boundary changes took place between 1965–70.

The two stages of the city-to-suburb movement stream are defined in terms of component rates:

Mobility Incidence Rate (MI) among city residents =

$$\frac{1965 \text{ city residents who moved within the city or to the suburbs of the same SMSA, 1965–70}}{1965 \text{ city residents who resided in the same SMSA, 1970}}; (1)$$

Suburban Propensity Rate (SP) among city movers =

$$\frac{1965 \text{ city residents who moved to the suburbs of the same SMSA, 1965–70}}{1965 \text{ city residents who moved within the city or to the suburbs of the same SMSA, 1965–70}}; (2)$$

The city-to-suburb stream mobility rate can therefore be defined as:³

City-to-Suburb Stream Mobility Rate (CS) among city residents =

$$\frac{1965 \text{ city residents who moved to the suburbs of the same SMSA, 1965–70}}{1965 \text{ city residents who resided in the same SMSA, 1970}}; (3)$$

Given the rates in (1), (2) and (3), the following relationships are evident:

$$CS = MI \times SP; (4)$$

$$\log CS = \log MI + \log SP. (5)$$

As shall be demonstrated below, the latter additive relationship is useful in attributing causal factors to city-to-suburb mobil-

³ The denominators of MI and CS are not strictly equivalent to the 1965 city population because they exclude: (a) 1965 city residents who have not survived until the end of the 1965–70 interval; (b) 1965 city residents who have migrated out of the metropolitan area over the course of the interval. Each of these exclusions was made for the practical reason that they could not be identified from our data source (migration tabulations from the 1970 census) described below. The first exclusion tends to slightly understate mobility levels because migrants, by virtue of their younger age structure, enjoy a greater probability of survival of the interval than nonmigrants.

The second exclusion can be justified on theoretical work which suggests that out-migrants from the metropolitan area cannot be considered local movers in the usual sense because their *migratory* moves are motivated largely by economic attributes that characterize the entire metropolitan (or labor market) area (Lansing and Mueller, 1967; Speare et al., 1975). Since local moves within the metropolitan area are not substitutable for these, one can argue that it is not appropriate to include out-migrants in the at-risk population for local mobility rates (if one move per individual is recorded during the interval). Frey (1978a) provides further elaboration on this point.

ity through each of the two stages in a path analysis.

One further refinement needs to be made in our analytic model: an adjustment for the relative proportion of the SMSA population which resides outside the central city. In our comparisons of MI, SP, and CSM rates among 39 SMSAs, it should come as no surprise that somewhat of a tautological relationship exists between the suburb/SMSA population ratio and the suburban propensity rate of central city movers. This ratio, in effect, serves as a crude proxy for the proportion of SMSA destination opportunities that exist in the suburbs. Because the purpose of this study is directed to evaluating the relative effects of various social and economic explanations for mobility, it is desirable to control for this relationship.

We therefore compute an adjusted suburban propensity rate (SP') which is defined as:

$$SP' = \left(\frac{SP}{\left(\frac{\text{suburb population 1965}}{\text{SMSA population 1965}} \right)} \right) \times K, \quad (6)$$

where K = mean value of the 1965 suburb/SMSA population ratio for the 39 SMSAs.

Since the city-to-suburb stream mobility rate is defined as the product of the mobility incidence and suburban propensity rates, an adjusted city-to-suburb stream rate (CS') is computed such that:

$$CS' = MI \times SP'; \quad (7)$$

$$\log CS' = \log MI + \log SP'. \quad (8)$$

Values for the rates just presented are based on tabulations in the *Mobility for Metropolitan Areas* subject report of the 1970 census (U.S. Bureau of the Census, 1973a). For each SMSA, these tabulations identify the reported 1965 city, suburb, and outside SMSA residence locations of 1970 city or suburb residents, aged 5 and above. 1970 city residents who reported living in the same dwelling unit as 1965 are also identified. Using these data, we can estimate rates (1), (2), (3) and (6) for individuals residing in each study SMSA in

both 1965 and 1970. (The reader interested in the computational details is referred to Frey [1978a].) It should be noted that the census tabulations do not identify multiple movers, return movers, or emigrants from the U.S. over the course of the five-year interval. Also, a significant minority of 1970 metropolitan residents (an average of 6.6% for the SMSAs in this study) are classed as "moved but previous residence abroad or not ascertained." These individuals were not included in the mover categories associated with the above rates.

Making use of the additive relationship (8), we first of all regress the natural log of the adjusted city-to-suburb stream rate on its two component rates for the 39 SMSAs in the study. This yields the following:

$$\log CS' = +1.0 MI + 1.0 \log SP', \\ (+.343) \quad (+.741) \quad (9)$$

where the values in parentheses are standardized regression (β) coefficients. The R^2 for this regression equation equals 1.00; hence, we are able to assess the relative variation, across SMSAs, attributable to each component of the city-to-suburb stream mobility rate by comparing their standardized regression coefficients. It can be seen that the coefficient associated with the suburban propensity component is considerably larger than that associated with the mobility incidence component. This suggests that levels of residential mobility tend to be fairly uniform among the resident populations of cities and that city-specific factors which exert greatest influence on the size of the city-to-suburb stream primarily affect the destination selection stage of the process.

Equation (9) represents the initial step in the construction of a path model that will be employed to examine the impact of different causal factors on city-to-suburb stream mobility through its two components. The model will allow us to identify each causal factor's effect for the purpose of evaluating the first hypothesis raised above. In addition, it will permit us to decompose each factor's total effect on $\log CS'$ into that directed through the mobility incidence component ($\log MI$) and

that directed through the suburban propensity component (log SP'). Since the latter component represents the "movers' destination selection" stage of the mobility process, this decomposition of effects will enable us to evaluate the second hypothesis raised above.

The analysis will occur in three parts: first, the relationship between log MI and various causal factors will be estimated in a regression analysis; second, the relationship between log SP' and appropriate factors will be estimated in a similar manner; and third, the total effects and decomposition of effects attributable to each causal factor will be computed from a path model constructed from the regression equations. Before proceeding with the analysis, we introduce the several city and SMSA attributes which will serve as causal factors.

CAUSAL FACTORS TO BE EVALUATED

The city and metropolitan attributes to be evaluated in this study represent measures of factors discussed above, whose relationships to white city-to-suburb movement have been subject to debate among urban scholars and policy analysts. One set of factors are intended to measure the independent racial effects on white out-movement from the city. If, as has been suggested, the increased exposure of whites to blacks results in their further flight from the center core, policies which serve to bring about such exposure will no doubt be subjected to closer scrutiny by city officials. A second set of factors is linked to the contention that central city decline itself has effected a continued out-migration. Several urban analysts have maintained that a feedback effect is occurring wherein the current selective out-movement from financially plagued cities contributes to a further tax base erosion and environmental deterioration in the central core and, hence, sets the stage for continued residential evacuation in the future (Bradford and Kelejian, 1973; Peterson, 1976; Clark et al., 1976). According to this view, an emphasis on racially-motivated central city out-migration would appear to be misplaced. Finally, a third set of factors not generally

mentioned in current discussions of white flight determinants will be considered in the present analyses. These include features of the metropolitan area's demographic structure which exert a strong influence on intra-SMSA movement patterns. Such attributes need to be taken into account if an accurate evaluation of the more interesting policy-relevant factors is to be made.

The analysis below evaluates the white migration effects associated with the three headings "factors related to race," "factors related to central city decline" and "factors related to population structure." These are listed in Appendix A along with their sources.⁴ The ten attributes were selected as a result of preliminary analyses, in which alternative indicators for several of the causal factors were examined. In the remainder of this section we present a brief rationale for each causal factor included and discuss its expected relationship with white city-to-suburb mobility.

Factors Related to Race

The first race-related factor, Percent City Black (i.e., the percent of the city population which is black), indicates the relative presence of blacks vis-à-vis the total population for each central city in the

⁴ It will be noted that many of the causal factors are based on 1970 measures. Although this practice introduces a potential simultaneity bias into our findings, we are bound by the constraints of available data. Census data for metropolitan population and housing characteristics are collected at ten-year intervals and only the 1970 characteristics are consistent with the city and suburb boundaries to which the mobility data pertain. This consideration also applies to the fiscal variables we employ. The data base prepared for the Advisory Commission in Intergovernmental Relations (1973: Appendix B) represents the only source, to our knowledge, which constructs SMSA city-suburb tax and educational expenditure disparity measures for each of the metropolitan areas in our study, based on boundaries which coincide with those in the census migration reports. To the extent it exists, simultaneity bias should operate to overestimate the effects of the factors, Postwar Suburban Development, Percent City Black, Suburb/City Per Capita Taxes, and Suburb/City Per Capita Educational Expenditures. However, an examination of the simultaneity effects associated with the first factor (discussed below) indicates that they are minimal.

study. As discussed earlier, the conventional wisdom which hypothesizes a positive relationship between Percent City Black and white city-to-suburb movement is rooted in the neighborhood racial transition literature of the 1950s. Its potential significance was pointed up more recently in the context of post-Kerner Commission debates over the migration consequences associated with instituting "ghetto enrichment" programs—interim measures aimed at improving the quality of life and increasing employment opportunities for central city blacks until more widespread "ghetto dispersal" could be effected (National Advisory Commission on Civil Disorders, 1968; Harrison, 1974). Critics of the enrichment strategy have contended that it would provide incentives for the continued city concentration of blacks (through in-migration from outside the metropolitan area) and that the visibility of such concentration would further discourage white residences and businesses from locating in the central core. In this vein, Kain and Persky (1969:75) write:

The central Negro ghetto has produced a significant distortion of metropolitan development. . . . The decline of central cities has been hastened by a conviction in the white community, both individual and corporate, that the ghetto would continue its rapid expansion, carrying along its associated problems of concentrated poverty and social disorganization.

To test the conventional wisdom and determine if, in fact, increased exposure to blacks does affect white city-to-suburb movement apart from other causal factors, we incorporate Percent City Black in the multivariate analyses that follow. In preliminary analyses, we attempted to refine our measure of black contact by including, in addition to Percent City Black, an index of central city racial segregation (the index of dissimilarity), and an interaction term based on this index and the factor, Percent City Black. None of these analyses resulted in substantial increases in the variance explained. Moreover, the effects on white city-to-suburb movement in individual SMSAs that could be attributed to the combination of these measures did not differ appreciably with those associated with Percent City Black when it

alone was included. The single measure was therefore chosen for reasons of parsimony.

The second race-related causal factor, School Desegregation, is a measure of change in racial segregation that occurred within central city public elementary schools over the period 1967–72. The importance of desegregation in the public schools for central city out-movement of white children and their parents is suggested in a study by Coleman et al. (1975) which examined white school enrollment changes for 67 central city school districts over the period 1968–73. The authors found a significant relationship to exist between intradistrict school desegregation and white school enrollment losses among central city districts. Moreover, increases in city-suburb *between district* racial segregation were found to occur in SMSAs whose central city districts had undergone substantial within-district desegregation. Other studies using similar data but focusing on different universes of districts and/or observation years have yielded conflicting results (see Pettigrew and Green, 1976a, and Snyder and Kelly, 1977, for a critical review of these).

Virtually all of the studies which have tested the school desegregation white flight hypothesis have examined desegregation effects on school enrollment losses, not on out-migration patterns. Slippage between the two can result from the tendency for white pupils to switch to private schools while still residing within the district. Nevertheless, a linkage between central city school desegregation (occurring in isolation of metropolitan wide practices) and white out-movement has been suggested by Coleman (1976:12):

. . . the present policies of school desegregation which focus wholly on within-district segregation exacerbate the already unstable ecology of our large cities. They are increasing rather than reducing or reversing the tendency for our large metropolitan areas to come to consist of black central cities and white suburbs.

This implied relationship between central city school desegregation and overall white city-to-suburb movement will be examined here.

Unfortunately, the period to which our migration data pertain is not the most appropriate one to capture this effect for two reasons. First, the Office of Civil Rights data used to compute district segregation change measures in this and other studies were only first collected in 1967. Hence, segregation indices which take into account school segregation levels at the beginning of the migration period cannot be constructed. Second, although a number of desegregation actions had been initiated in northern city districts prior to 1970 (Rossell, 1975), those most likely to elicit a white response (i.e., the reassignment of white students to predominantly black schools) did not become prevalent until the fall of 1971.⁵

In preliminary analyses, we examined the white city-to-suburb movement effects associated with three measures of school segregation change: (1) difference between the 1967 minus 1970 value of the index of dissimilarity computed for city elementary school students; (2) difference between the 1967 minus 1972 value of the index of dissimilarity computed for city elementary school students (i.e., the measure described in Appendix A); and (3) a dummy variable indicating a value of 1.0 if a district's index of dissimilarity decreased ten or more points over the course of the 1967-72 period, and a value of zero otherwise. Measures (2) and (3) take cognizance of the more prevalent northern desegregation which occurred in the immediate post-1970 period as it is reasonable to assume that white city-to-suburb movement prior to 1970 may have been influenced by the prospect that widespread desegregation would be taking place in affected city districts. The preliminary findings revealed a slight negative relationship to exist between measure (1) and white city-to-suburb movement, indicating that pre-1970 desegregation exerted a negligible influence independent of other causal factors. Each of the latter two measures yielded a stronger positive relationship with white suburbanward movement, and measure (2), the continu-

ous variable, was chosen as the superior measure of change.

Because several of the aforementioned school enrollment decline studies find the school desegregation white flight effect to be heightened in city school systems with large black enrollments, we performed still another analysis in which our change measure (2) was weighted by the black proportion of city elementary students in 1970. Our findings from this investigation indicate that white city-to-suburb residential flight is no more responsive to this weighted measure than it is to measure (2) alone. (Indeed, the weighted measure exhibited negative, though insignificant, effects on both white mobility incidence and the suburban propensity of white city residents when incorporated into the equations presented below.) On the basis of these results, therefore, we decided to retain measure (2) as an index of school desegregation. It nevertheless should be emphasized that our analysis does not take into account desegregation effects on post-1970 population movement. Hence, our results for this factor must be considered as only suggestive of those that would be obtained if appropriate migration data were available.

The third race-related factor, Incidence of Racial Disturbances, measures the rate at which racial disorders broke out in the central city in the late 1960s. Although scattered racial riots and disorders have occurred in earlier periods, the Kerner Commission, choosing to view racial disorders of the 1960s from a national perspective, attributed a number of contributing ingredients to a more pervasive "white racism" which has been developing in large cities since the end of World War II. Spilerman tested a range of hypotheses in an attempt to account for the location of these racial disorders and concluded that the latter were "responses to frustrations which are uniformly felt by Negroes, irrespective of their community situations" (Spilerman, 1970:627).

Although an explanation of the riots does not seem to lie with community-specific causes, riot-prone communities have experienced negative effects including: recurring disorders, increased distrust between blacks and whites, less interra-

⁵ We are grateful to Christine Rossell for calling this to our attention.

cial communication, and the growth of white segregationist or black separatist groups (National Advisory Commission on Civil Disorders, 1968:151). Increased suburbanward flight may represent another response to the prevalence of racial disorders in a city. Such a response would be significant for future movement patterns in ghetto-ridden cities since according to the Kerner Commission, a possible consequence of accelerating aid programs to urban ghettos may be short-term increases in disorder activity resulting from the unfulfilled expectations of program recipients. The measure, incidence of racial disturbances, used here employs data collected by Spilerman (1970) on instances of racial violence involving 30 or more individuals that were initiated by aggression on the part of blacks. In preliminary analyses, we used the *number* of racial disturbances as an alternative to the incidence measure and found its influence on the migration variables to be no greater in magnitude. Moreover, they were inconsistent—exerting a negative (though insignificant) effect on white mobility incidence and a positive effect on white suburban propensity. On the basis of these findings we chose to employ the incidence measure in our analysis below.

Factors Related to Central City Decline

The decline of the central city relative to its suburbs in terms of residential costs, services and social environment can be translated into several specific dimensions. In this study, we focus on factors which have previously been posited as determinants of out-migration. Two of these—the suburb/city ratio of per capita tax revenues, and the suburb/city ratio of per capita educational expenditures—reflect cost and amenity comparisons which potential movers can assess in dollars-and-cents terms. The inclusion of both these factors in the following multivariate analysis will allow us to evaluate the proposed feedback relationship between city-suburb fiscal disparities and suburbanward out-movement. Since metropolitan areas differ on the degree to which local sources contribute to overall tax revenues and education expenditures,

the measures we employ for each of these include total revenues and expenditures attributable to local and nonlocal government levels.

Values for the first ratio, suburb/city per capita taxes, are less than 1.00 in 36 of the 39 SMSAs in this analysis, a finding which coincides with our earlier discussion of central cities' fiscal difficulties. To the extent that a greater city tax burden represents an incentive for suburbanward movement, a negative relationship between this ratio and the migration measures is expected.

Values for the second ratio, suburb/city per capita educational expenditures, are greater than 1.00 in 30 of the 39 SMSAs. Since the quality of a community's school system provides a particular attraction for households with children and residential mobility rates are generally high among families with children in the preschool ages (Long, 1972), the suburb/city per capita educational expenditure ratio is expected to exert an independent, positive effect on suburbanward relocation. In preliminary analyses, we examined the effects of an alternative measure, suburb/city per pupil educational expenditures, as an indicator of this factor and found its relationship to the mobility variables to be less impressive. Although neither measure is an ideal indicator of relative school quality, the poorer performance of the latter might be attributed to its tendency to overstate the quality of city schools since a disproportionate amount of city expenditures goes into vocational programs and special education for disadvantaged students (Pettengill and Uppal, 1974).

The City Crime Rate constitutes a third central city decline-related factor which is often posited as a flight determinant (Orfield, 1976). Due to past suburbanization and fixed political boundaries, many cities tend to house disproportionate numbers of those population subgroups which are subject to high arrest and victimization rates (President's Commission on Law Enforcement and Administration of Justice, 1967). Yet at least two empirical studies yield results which counter the commonly held view that the city crime rate is linked to increased suburbanward relocation (Droettboom et al., 1971;

Guterbock, 1976). The Droettboom et al. findings, in particular, indicate that moves associated with the perception of crime in the city are undertaken to a great extent by low-income individuals and are more likely to result in a within-city relocation rather than movement to a suburban destination. This study, an analysis of nationwide survey findings, does not take cognizance of competing explanations for mobility patterns. The present analysis will evaluate the independent mobility effects associated with the city crime rate when other relevant factors (such as the city's racial composition) are taken into account.

The crime rate measure employed here is based on the number of crimes that are reported in the city per 1,000 city population. Although Gibbs and Erickson (1976) contend that such a rate might be deceptively large because the denominator (city population) does not include potential noncity victims or offenders, we would argue that this rate more accurately represents the *perception* of crime among city residents and therefore remains a useful measure for purposes of the present investigation.

The fourth central city decline-related factor to be evaluated as a mobility precipitant pertains to the suburban relocation and expansion of employment opportunities. As mentioned earlier, it has been posited that the relatively recent dispersal of blue-collar jobs in many metropolitan areas ultimately will affect the residence and/or workplace distributions of present central city residents. To the extent that central city worker-residents are unable to locate alternative city jobs two responses (in addition to unemployment) are possible: (1) increasing rates of "reverse" city-to-suburb commuting; or (2) increasing rates of city-to-suburb residential mobility. Aggregate work-residence patterns for the 1960-70 decade suggest that both responses were prevalent among central city whites during the period (Guest, 1975a; Kasarda, 1976). However, the residential mobility literature provides mixed evidence regarding the immediate impact of employment relocation on local mobility decisions (Goldstein and Mayer, 1964; Roistacher, 1974; Goodman, 1974;

Guest, 1975b). In this study, we shall use the percent of city workers who commute to the suburbs (City-Suburb Commuters) as a proxy for recent job decentralization and examine its posited direct relationship with white movement to the suburbs.

Factors Related to Population Structure

The factors described under the previous two headings are continually being suggested as potential causes of central city population loss via the out-migration route in recent writings of urban scholars and policy analysts (see contributions in Sternlieb and Hughes, 1975; 1978; Gorham and Glazer, 1976; Leven, 1978). Such discussions often do not take explicit account of factors associated with a metropolitan area's demographic structure which are far less amenable to short-term alterations but nevertheless exert a strong and continuous influence on intrametropolitan redistribution processes. It is desirable to control for the effects of these latter factors in a multivariate analysis in order to provide an accurate evaluation of policy relevant factors whose effects on population mobility may be of more immediate interest. The present analysis will incorporate measures for three such factors: one which controls for the effect of recent intrametropolitan growth patterns, and two measures of central city population and housing composition which have been shown to influence levels of mobility incidence among city residents.

Postwar Suburban Development, the first population structure-related factor, measures the recency of a metropolitan area's suburban development. Policy discussions of race-related and central city decline-related migration determinants, alluded to above, tend to focus on metropolitan areas which greatly overlap with respect to demographic structural features and growth history. These are generally older areas in the Northeast and North Central regions with high central city population densities. Most have been decentralizing in population since early in the century and have undergone actual central city population losses since 1950.

In contrast, there exist a large number

of expanding, low density metropolitan areas, located primarily in the South and West, whose central cities and suburbs have developed more recently. Due to their ability to annex territory to the political city boundaries, the central cities of these newer SMSAs are not as "under-bounded" as those in older, more densely populated metropolitan areas and their population and housing characteristics are not as greatly differentiated from those of the suburbs (Schnore and Winsborough, 1972; Guest, 1972; Kaufman and Schnore, 1975; Kasarda and Redfearn, 1975). The high level of suburban growth displayed by these areas in the post-1950 period approximates a natural expansion of the city periphery which now-declining areas experienced decades ago.

Because the pattern of development and suburbanization recently experienced by the latter areas is likely to characterize redistribution processes during the period under observation here, we include the factor, Postwar Suburban Development, to control for such patterns. It is operationalized as the percent of 1970 suburban year-round units in structures built since 1950⁶ and is expected to relate

positively to city-to-suburb movement levels. This factor was chosen among alternative measures of demographic structure and growth histories that have been employed by other analysts: age of the city; central city population density, manufacturing ratio of the central city, and geographic region (Schnore and Winsborough, 1972). Although one of these measures tended to be correlated with Postwar Suburban Development (zero-order correlations with each of the first three were stronger than $-.44$), these structural features are further removed, in a causal sense, from the redistribution process. This was confirmed in preliminary analyses which showed Postwar Suburban Development to exert stronger effects on city-to-suburb mobility than those exerted by the other measures.

The final two factors related to population structure are Percent City Owners, and City Age Distribution. Each controls for the compositions of central city residents with respect to factors that previous research suggests are strong determinants of residential mobility incidence at the individual level (Rossi, 1955; Speare, 1970; Speare et al., 1975). Percent City Owners, the percent of white (nonblack) city residents of self-owned units, is expected to relate negatively to the mobility incidence among white residents. City Age Distribution measures the percent of city nonblack residents in the most highly mobile age groups and is expected to relate positively to their mobility incidence. Unlike the other eight causal factors in this study, which will be evaluated as determinants for both components of the city-to-suburb mobility stream, Percent City Owners and City Age Distribution will be evaluated only as determinants of the mobility incidence component.

ANALYSIS

To follow the analysis strategy outlined earlier, we shall examine the effects of the various causal factors on our measures of white city residents' mobility incidence,

⁶ At a reviewer's suggestion, we have looked into the possibility that the city-to-suburb mobility measure which represents our dependent variable may be systematically related to the Postwar Suburban Development factor (i.e., that the construction of suburban dwelling units during the 1965-70 period may have been due to the demand of 1965-70 city-suburb movers). In response we estimated, for each SMSA, a hypothetical measure of Postwar Suburban Development intended to eliminate the possible effects of city-to-suburb movers, given the extreme assumption that all households in the white 1965-70 city-to-suburb stream locate in 1965-70 constructed dwelling units. (This hypothetical Postwar Suburban Development measure differs from the actual measure defined in Appendix A in that the former eliminates the number of households in the white 1965-70 city-to-suburb stream from both numerator and denominator.) The computed values for the hypothetical measures differ only slightly from those of the actual measures for individual SMSAs since suburban dwelling unit construction responds to other sources of demographic change aside from city-suburb mobility (i.e., out-migration from the suburbs, in-migration from outside the SMSA, household formation in the suburbs). Moreover, in estimating regression equations 4 in Table 1, and 4 in Table 2 based on these hypothetical measures, we find only a slight diminution of effects associated with Postwar Suburban Development (from β values of $+.593$ to

$+.573$, and from $+.529$ to $+.509$, respectively) and minimal changes in the effects of other causal factors.

and white city movers' suburban propensity (log MI and log CS' as defined earlier) in separate regression analyses. The results will then be incorporated into a path analysis to determine the effects of each causal factor on the log of the white city-to-suburb stream mobility rate (CS'), and test the two hypotheses raised at the outset.

An intercorrelation matrix for the causal factors employed in the following regression analyses is presented in Appendix B. An examination of the correlation coefficients suggests that our models will not be subject to high levels of multicollinearity and its associated problems. Of the 45 coefficients among the ten factors, none indicate relationships as strong as $\pm .50$ and only seven are stronger than $\pm .30$. One association which was not unanticipated is the $+.41$ correlation between Percent City Black and the City Crime Rate. The implications of this relationship for our findings are discussed below.

Causal Factors and Mobility Incidence

Presented in Table 1 are four equations in which the log of the mobility incidence rate (log MI) is regressed on the various categories of the causal factors: popula-

tion structure factors (equation 1); population structure and race-related factors (equation 2); population structure and central city decline factors (equation 3); and factors for all three categories (equation 4). These equations allow us to evaluate, first, the effects of population structural factors on mobility incidence, and second, the effects of factors in the more policy-relevant categories when population structure is taken into account.

It is clear, from examining all four equations, that white city residents in the recently developing SMSAs experience higher levels of mobility incidence. The beta (β) coefficient values for Postwar Suburban Development are consistently large whether or not factors related to race or central city decline are included in the equation. The effects of the compositional factors, Percent City Owners and City Age Distribution, on mobility incidence are less impressive than we were led to expect on the basis of existing literature. Our findings do indicate that cities with more self-owned (and presumably single-family) dwelling units tend to exhibit lower levels of mobility incidence among their white residents. The impact of the city's age composition on mobility incidence levels, however, is not as strong according to the β values in Table 1. It is

Table 1. Log MI Regressed on Factors Related to Population Structure, Factors Related to Race, and Factors Related to Central City Decline

Causal Factors	Equation 1		Equation 2		Equation 3		Equation 4	
	b	β	b	β	b	β	b	β
Factors Related to Population Structure								
Postwar Suburban Development	+.0065*	+.721	+.0062*	+.696	+.0054*	+.604	+.0053*	+.593
Percent City Owners	-.0038*	-.382	-.0032*	-.313	-.0028*	+.274	-.0027*	-.268
City Age Distribution	-.0027	-.033	+.0023	+.028	+.0125	+.153	+.0131	+.160
Factors Related to Race								
Percent City Black			+.0014	+.136			+.0007	+.068
School Desegregation			-.0001	-.015			+.0004	+.051
Racial Disturbances			+.0291	+.111			+.0066	+.025
Factors Related to Central City Decline								
City Decline								
Suburb/City Taxes					-.0019*	-.252	-.0018*	-.236
Suburb/City Ed Expenditures					-.0003	-.062	-.0003	-.059
City Crime Rate					+.0006	+.078	+.0005	+.058
City-Suburb Commuters					+.0068*	+.391	+.0071*	+.403
Constant Term	-1.0326		-1.640		-1.2067		-1.2400	
R ²	.414		.436		.627		.633	

*Coefficient at least twice its standard error.

likely that the effects of the latter two compositional factors are diluted to some degree by their moderately strong correlations with Postwar Suburban Development. Nevertheless, a comparison of the R^2 values in equation 1 with those in equations 2, 3 and 4 indicates that these three population structural factors account for a substantial share of inter-SMSA variation in mobility incidence, and suggests that their inclusion as controls in this evaluation of race-related and central city decline-related factors is justified.

Our contention that the mobility incidence effects associated with the race-related factors in this analysis would be small is given support in the Table 1 equations. The additional variance explained in equation 2 over equation 1 is minimal and the Beta coefficients for School Desegregation and Racial Disturbances in equation 4 are among the smallest of all the causal factors in the analysis. Even the effects for Percent City Black, a measure thought to be associated with increased flight levels, show up to be relatively small when other demographic structure and central city decline-related factors are taken into account. (Its .068 Beta coefficient value in equation 4 can be compared with the +.136 value in equation 2 which does not take account of central city decline factors, and its zero-order correlation with the log of MI of +.200.) In contrast, the Beta coefficients associated with the Suburb/City Per Capita Tax Ratio, and City-Suburb Commuters, indicate that these central city decline factors exert nontrivial influences on city mobility incidence levels. The magnitudes of their effects do not change appreciably whether or not race-related factors are included in the equation. Moreover, a comparison of the R^2 values in equations 1 and 3 indicate that, unlike the race-related factors, the block of central city decline-related factors contribute substantially to the percent of variance explained above that which can be attributed to population structure.

In sum, these regression equations indicate that the factors associated with metropolitan population structure explain a good deal of inter-SMSA variation in the mobility incidence of white city residents. Additional independent effects can be at-

tributed to measures of city-suburb fiscal, and residence-workplace disparities when population structure has been taken into account. However, the small effects that are attributable to each of the race-related factors, when controls for other mobility determinants are instituted, do not lend support to the view that a greater exposure to blacks can be linked to substantial increases in the incidence of mobility among central city whites.

Causal Factors and Suburban Propensity

The regression equations that were estimated to examine the effects of each of the causal factors on the log of the white suburban propensity rate ($\log SP'$) are presented in Table 2. Here, as in Table 1, the four equations permit an evaluation of population structure effects alone, and effects associated with race-related, and central city decline-related factors when population structure is taken into account.

In these equations the single population structure factor, Postwar Suburban Development, again shows up to have an important influence on mobility patterns. Its effect, as indicated by the β values in Table 2, is strong and consistent in all four equations. It appears, therefore, that white city residents in recently developed SMSAs are not only more likely to move (as was demonstrated in the analysis of mobility incidence) but that such moves are more apt to be destined toward the suburbs.

Turning to the more policy-relevant factors in the analysis, we find that race-related factors exert a more formidable influence on the suburban destinations of white city movers than they exerted on the mobility incidence of white city residents. A comparison of the R^2 values in equations 1 and 2 shows that the block of race-related factors accounts for a considerable increase in the variance explained above that attributable to demographic structure alone. The Beta coefficient values associated with Percent City Black indicate that its strong positive effect on white suburban propensity is not appreciably reduced when factors related to central city decline are included in the equation, and that the magnitude of its

Table 2. Log SP' Regressed on Factors Related to Population Structure, Factors Related to Race, and Factors Related to Central City Decline

Causal Factors	Equation 1		Equation 2		Equation 3		Equation 4	
	b	β	b	β	b	β	b	β
Factors Related to Population Structure								
Postwar Suburban Development	+.0105*	+.545	+.0108*	+.559	+.0097*	+.500	+.0102*	+.529
Factors Related to Race								
Percent City Black			+.0086*	+.405			+.0082*	+.377
School Desegregation			+.0013	+.079			+.0008	+.051
Racial Disturbances			+.1089*	+.191			+.0550	+.097
Factors Related to Central City Decline								
City Decline								
Suburb/City Taxes					-.0051*	-.312	-.0047*	-.287
Suburb/City Ed Expenditures					+.0020*	+.210	+.0027*	+.281
City Crime Rate					+.0045*	+.261	+.0020	+.115
City-Suburb Commuters					+.0080*	+.212	+.0091*	+.240
Constant Term	-1.6585		-1.9323		-1.8348		-2.0898	
R ²	.297		.484		.495		.608	

*Coefficient at least twice its standard error.

effect is at least as important as those associated with city-suburb fiscal disparities. In contrast, the suburban propensity effects for the two remaining race-related factors, School Desegregation and Racial Disturbances, are fairly minimal when other mobility determinants are taken into account.⁷

The importance of central city decline-related factors toward the explanation of white city movers' suburban propensity is also apparent from the equations in Table 2. As with the race-related variables, these factors contribute substantially to the variance explained by the population structure variables alone (based on a comparison of the R² values in equations 1 and 3). Moreover, the Beta values in equation 4 indicate that strong effects in expected directions can be attributed to

three of the four central city decline factors, Suburb/City Taxes, Suburb/City Educational Expenditures and City-Suburb Commuters. Although the β value associated with the fourth factor, the City Crime Rate, tends to be large in equation 3, the incorporation of the race-related factors substantially diminishes its effect. (In order to examine the extent to which the correlation between the city's social composition and crime rate might influence the results in equation 4, if one or the other was not included, we recomputed two alternative equations—each leaving out one of these two factors. We found that when the City Crime Rate factor was omitted from equation 4, the β value associated with Percent City Black increased from +.377 to +.422. When Percent City Black was left out of the equation, the +.115 Beta coefficient for City Crime Rate was increased to +.266. In each case the new β coefficients were larger than twice the values of their standard errors.)⁸

⁷ In addition to the reported findings, we examined the possibility that the socioeconomic characteristics of the city black population might exert an independent effect on white suburban propensity rates. In two separate analyses, we incorporated one of the following variables, Percent of City Blacks (age 25 and over) with 0-8 years of schooling, and Percent of City Blacks living in families with annual incomes less than \$6,000, in addition to those already included in equation 4 of Table 2. Findings from these investigations indicated that contributions to R² associated with each of these factors were negligible, their standardized regression (β) coefficients were relatively small (+.017, +.032), and their respective regression coefficients were far smaller than their standard errors.

⁸ In still another analysis, we retained in the equation both the Percent City Black and City Crime Rate factors, and added an interaction term defined as their product (Percent City Black \times City Crime Rate). The R² value for this equation (.609) was only slightly larger than that for equation 4 in Table 2, and the relatively small β coefficient associated with the interaction term was negative (-.070). Moreover, when the interaction term is included, the regression coefficients for that term, City Crime Rate and Percent City Black were all less than twice the values of their respective standard errors.

The preceding regression analyses indicate that aside from the strong influence of population structure, both the city's racial composition and factors symptomatic of central city decline—city-suburb fiscal disparities and the suburbanization of employment opportunities—exert independent effects on the suburban relocation patterns of white city movers in expected directions. In light of our earlier discussion, the magnitude of effect linked to the city's racial composition is somewhat surprising and would appear to discount our assertion that this effect would be minimal when factors related to central city decline are taken into account. These findings, however, pertain only to the suburban propensity stage of the mobility process. A more accurate assessment of each causal factor's effects on white city-to-suburb mobility can be made from the analysis that follows.

Causal Factors and City-to-Suburb Mobility

We can now proceed to evaluate the effects of each causal factor on the log of the city-to-suburb stream mobility rate (log CS') by constructing a path model wherein the relationships between the ten causal factors, and the log of the city-to-suburb stream rate are directed through the logs of its two component rates, the mobility incidence rate and the suburban propensity rate (log MI and log CS' as presented in equation [8]). A diagram of the path model based on the standardized regression (β) coefficients in text equation (9), Table 1 equation 4, and Table 2 equation 4, appears as Figure 1. Because the variation in log CS' is completely determined by variations in log MI and log SP', no direct relationships exist between the ten causal factors and log CS', or in other words, our model forces all relationships between the causal factors and the city-to-suburb mobility measure (log CS') to operate through the measures of mobility incidence (log MI) and/or the measure of suburban propensity (log SP'). (See Winsborough's path model in Duncan [1971] for a similar application of this technique to a different problem.)

In order to evaluate each factor's con-

tribution to SMSA variation in log CS' given the path model in Figure 1, we employ the decomposition of effects technique proposed originally by Duncan (1971) and elaborated upon by Alwin and Hauser (1975). The "total effects" (using the terminology of the latter authors) for each causal factor are determined by summing the products of all possible paths between that factor and the dependent variable, log CS'. Since there are no direct paths between each factor and CS', no "direct effects" can be computed from our model. The total effects associated with each causal factor, therefore, represent the sum of two "indirect effects": those through log MI (the path coefficient connecting the factor and log MI, multiplied by +.343) and those through log SP' (the path coefficient connecting the factor and log SP' multiplied by +.741). A summary of each factor's total effects on SMSA variation in log CS' as well as its indirect effects through log MI and log SP' is presented in Table 3.

We can now return to the hypotheses raised at the outset. Our first concern was with the validity of various racial and non-racial explanations for the city-to-suburb movement of whites. It was our contention that factors related to race would be of lesser importance than those related to central city decline. The effects shown in column (1) of Table 3 do not support this assertion. Aside from the large effects attributable to Postwar Suburban Development, one of the factors which controls for the metropolitan area's population structure, the out-movement effects associated with the central city's racial composition (Percent City Black) are similar in magnitude to the strongest central city decline-related effects. Effects for the two other race-related factors, School Desegregation and Racial Disturbances, are far less impressive. These factors would appear to represent minor, if not negligible influences on white residential out-movement. As we expected, central city decline-related factors are prominent in accounting for SMSA variations in white city-to-suburb stream movement. All four of these factors influence movement in expected directions with strongest effects being attributable to our measure of recent

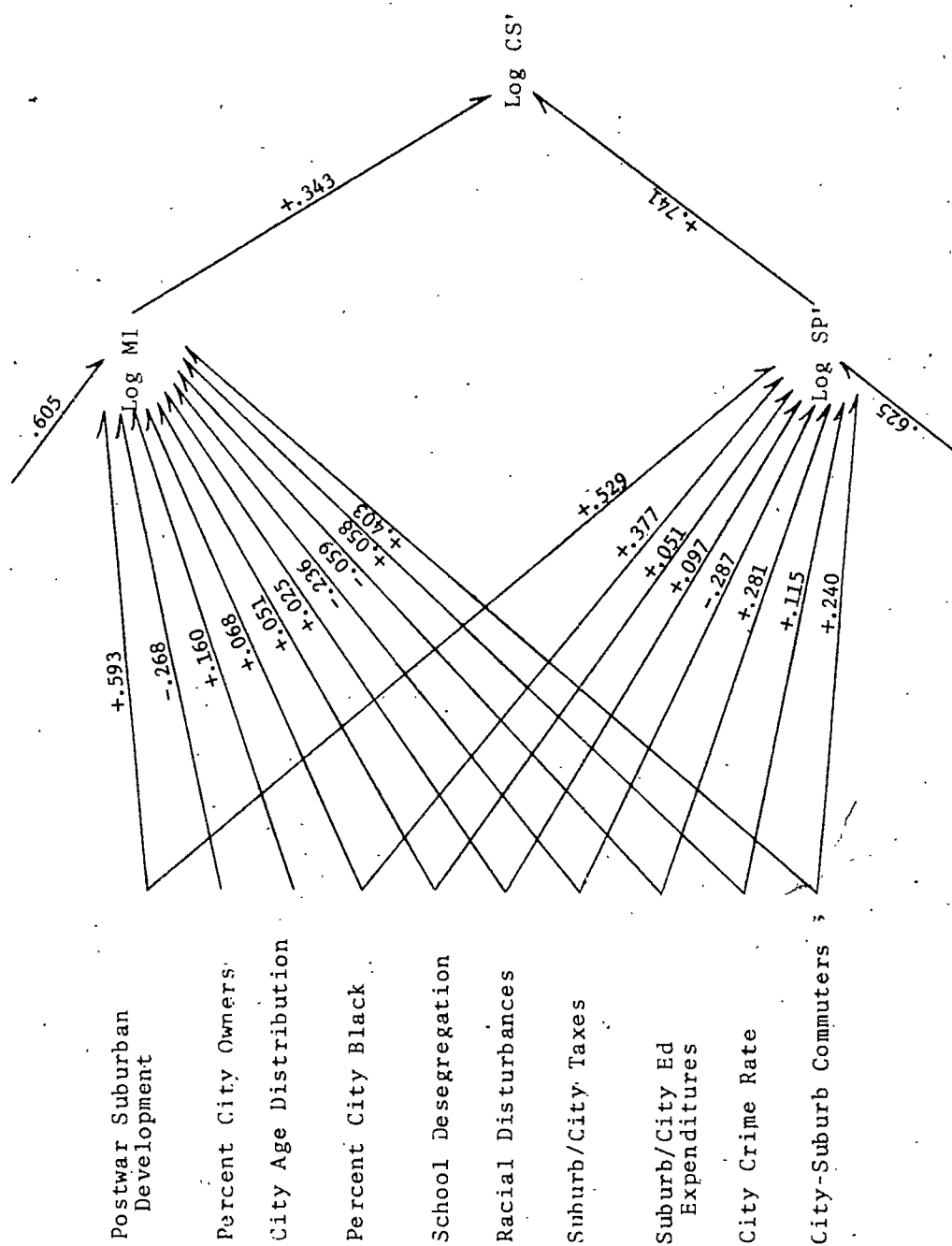


Figure 1. Path Diagram Relating Causal Factors to Log CS' through Log MI and Log SP' (Based on Equation 9 in Text, Equation 4 in Table 1, and Equation 4 in Table 2)

Table 3. Decomposition of Effects for Causal Factors on SMSA Variation in Log CS' (Based on Path Diagram in Figure 1)

Causal Factors	Total Effects on SMSA variation in Log CS' (1)	Effects through:	
		Log MI (2)	Log SP' (3)
Factors Related to Population Structure			
Postwar Suburban Development	+.595	+.203	+.392
Percent City Owners	-.092	-.092	
City Age Distribution	+.055	+.055	
Factors Related to Race			
Percent City Black	+.302	+.023	+.279
School Desegregation	+.055	+.017	+.038
Racial Disturbances	+.080	+.008	+.072
Factors Related to Central City Decline			
Suburb/City Taxes	-.294	-.081	-.213
Suburb/City Ed Expenditures	+.188	-.020	+.208
City Crime Rate	+.105	+.020	+.085
City-Suburb Commuters	+.316	+.138	+.178

employment suburbanization (City-Suburb Commuters) and city-suburb tax and educational expenditure disparities.

In the second hypothesis, we expected that racial factors—to the extent that they influence city-to-suburb stream mobility—would operate primarily through the destination selection process of movers. This hypothesis can be evaluated by examining the extent to which each factor's total effects on log CS' (in column [1] Table 3) are directed through log SP' (in column [3] Table 3)—the suburban propensity component of the log of the city-to-suburb mobility stream rate. The data in Table 3 show clearly that our second hypothesis is confirmed not only for factors related to race, but for *all* factors which are causally linked to log CS' through both log MI and log SP' (the factors Percent City Owners and City Age Distribution are linked only through log MI). Furthermore, when one focuses only on effects directed through the mobility incidence component, log MI (column [2]), it can be seen that effects associated with the Percent City Black are dwarfed by those attributable to central city decline factors, City-Suburb Commuters and Suburb/City Taxes.

Finally we wish to underscore the point, made obvious above, that it is important to take cognizance of a metropolitan area's population structure in multivariate analyses directed to assessing the effects

of more short-term influences on residential mobility patterns. The consistently large effects associated with our measure of recency of suburban development (Postwar Suburban Development) in each of the regression analyses and in the decomposition of effects analysis supports our claim that an SMSA's current redistribution patterns are shaped, in part, by its recent growth history as well as by slowly changing ecological and demographic features of the area.

CONCLUSION

We began this investigation by advancing two hypotheses that are relevant to understanding both why and how recent city-to-suburb movements of whites in large metropolitan areas have taken place. In the first, or "why" hypothesis, we expected that racially-linked city attributes such as residential racial composition, the incidence of racial disorders or an increase in school desegregation would be less likely to affect the out-movement of whites than attributes which reflect the social and economic decline in the central city relative to the suburbs.

Our findings do not allow us to discount the racial composition of the central city as a predisposing factor toward white suburbanward movement. Although we would have been prone to argue that a strong zero-order correlation between a

city's black population percentage and its level of white out-movement might mask other mobility-inducing features of cities with large concentrations of blacks such as higher taxes or greater crime rates, our findings, which control for these factors, do not lend support to this view. Strong mobility effects, however, are not found to be associated with cities that had undergone recent desegregation of public schools or those which had been subject to racial disturbances during the late 1960s. As we have noted earlier, the weak relationship between the former factor and white out-movement may not yet be definitive since a good deal of northern school desegregation that entailed two-way bussing took place subsequent to the 1965-70 migration interval under investigation here.

Although the racial influences fared better than we expected, we find the mobility of whites to be just as responsive to various dimensions of central city decline—city-suburb fiscal disparities, particularly relative tax levels, and also to the degree to which employment has suburbanized. The data also show a substantially greater out-movement of whites from metropolitan areas where there has been considerable postwar suburban development. These, however, are usually newer and more rapidly growing areas with large counterstream movements *into* the city that tend to balance out the central city flight.

In the second, or "how" hypothesis, it was anticipated that racial influences on white city-to-suburb mobility would operate primarily through the selective destination choices of movers rather than through their decisions to move. Our data strongly supported this expectation for both racial and nonracial causes. This insight into the dynamics of intraurban mobility portends some short-term optimism for the plight of the declining central city. It suggests that deteriorating economic and social conditions in the core will not precipitate a wholesale evacuation of current residents but will primarily affect the destination selections of that continually-present mover pool which comprises a relatively constant proportion of the total population from city to city. To the extent

that racial factors proved to be negligible in explaining the incidence of mobility across SMSAs, we conclude that the term *white flight* is an inappropriate description of the suburbanward movement of city whites.

This study was undertaken to shed light on the residential white-flight impacts often attributed to proposed policies such as ghetto enrichment programs for inner city minorities and central city school desegregation, in order that we might clarify the role of racial factors in this movement. Although our first hypothesis was not confirmed, the findings here do not support the view that increases in the numbers or levels of integration of central city blacks will have a substantial effect on white out-movement in the short-term. Hence programs aimed at achieving higher standards of living and better schooling for central city minorities might be implemented without precipitating immediate white population losses.

Despite this mildly optimistic implication of our analysis, we have uncovered no easy remedies toward decreasing the level of white out-movement which is presently taking place. The fiscal crisis in big city government as well as the suburbanization of employment opportunities and residences are likely to continue, particularly in the already declining central cities of our older metropolitan areas. The resulting increase in disparities between cities and their suburbs in services offered and taxes levied is likely to become even more important in the future mobility decisions of central city residents, than was shown during the 1965-70 period.

There may be some truth to Gorham and Glazer's (1976:28) less than optimistic prognosis that:

The declining cities are going through a period of urban natural selection. The most likely outcome: some will pull out, stabilize and even revitalize; others will continue to weaken and eventually stabilize at a much lower level of activity.

Given this situation, central cities must look beyond their own political boundaries to obtain the resources necessary to increase their attractiveness for residents and industry.

APPENDIX A

DEFINITIONS AND SOURCES OF CITY AND SMSA ATTRIBUTES TO BE EVALUATED AS CAUSAL FACTORS OF WHITE CITY-TO-SUBURB MOVEMENT

Factors Related to Race

Percent City Black

Percent of total 1965 city population which was black. 1965 totals were averaged from 1960 and 1970 totals.

Source: U.S. Bureau of the Census, 1973b.

School Desegregation

Difference between the 1967 minus 1972 values of the index of dissimilarity computed for black and nonblack elementary school students across schools within the central city district.

Source: U.S. Commission on Civil Rights, 1967; 1974.^a

Incidence of Racial Disturbances

The number of spontaneous outbreaks characterized primarily by Negro aggression which took place in the city between 1965-68, per 100,000 central city population, 1965.

Sources: Lemberg Center for the Study of Violence, 1968a; 1968b; Congressional Quarterly Service, 1967. *The New York Times Index*.^b

Factors Related to Central City Decline

Suburb/City Per Capita Taxes

Ratio of 1970 suburban tax revenues per capita to 1970 central city tax revenues per capita ($\times 100$).

^a School segregation indices were made available by Karl and Alma Taeuber.

^b The racial disturbance data were made available by Seymour Spilerman.

Source: Advisory Commission on Intergovernmental Relations, 1973: Appendix B.

Suburb/City Per Capita Educational Expenditures
Ratio of 1970 suburban educational expenditures per capita to 1970 central city educational expenditures per capita ($\times 100$).

Source: Advisory Commission of Intergovernmental Relations, 1973: Appendix B.

City Crime Rate

Number of serious crimes reported in 1970 per 1000 central city population, 1970. Serious crimes include murder, rape, robbery, aggravated assault, burglary, larceny, and auto theft.

Source: U.S. Bureau of the Census, 1973b.

City-Suburb Commuters

Percent of 1970 central city residents reporting a place of work, that report a suburban workplace.

Source: U.S. Bureau of the Census, 1973c.

Factors Related to Population Structure

Postwar Suburban Development

Percent of 1970 suburban year-round units in structures built since 1950.

Source: U.S. Bureau of the Census, 1973b.

Percent City Owners

Percent of 1970 nonblack-occupied dwelling units in the central city which are owner occupied.

Source: U.S. Bureau of the Census, 1971.

City Age Distribution

Percent of the 1970 nonblack central city population aged five and over which was in the 20-29 year old age group in 1965.

Source: U.S. Bureau of the Census, 1973a.

APPENDIX B

Zero-Order Correlations among Causal Factors, and between Causal Factors and Mobility Measures, 39 SMSAs

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Postwar Suburban Development	1.00									
2. Percent City Owners	.424	1.00								
3. City Age Distribution	.443	.063	1.00							
4. Percent City Back	.030	-.185	-.138	1.00						
5. School Desegregation	-.270	-.290	-.299	-.099	1.00					
6. Racial Disturbances	.331	.262	.162	.054	-.257	1.00				
7. Suburb/City Taxes	-.116	-.037	.259	-.208	-.057	-.216	1.00			
8. Suburb/City Ed Expenditures	-.016	.168	-.073	-.296	-.023	.115	.473	1.00		
9. City Crime Rate	.155	-.334	-.172	.409	.052	-.043	-.249	-.205	1.00	
10. City-Suburb Commuters	-.136	-.109	-.148	-.011	.254	-.316	.122	-.132	.160	1.00
11. Log MI	.545	-.078	.263	.200	-.005	.117	-.274	-.294	.374	.307
12. Log SP'	.545	.096	-.078	.407	-.020	.236	-.310	-.027	.406	.120
13. Log CS'	.591	.044	.033	.370	-.016	.215	-.323	-.120	.430	.194

APPENDIX C

LIST OF STANDARD METROPOLITAN STATISTICAL
AREAS INCLUDED IN ANALYSIS

New York City, N.Y.	Portland, Ore.-Wash.
Chicago, Ill.	Phoenix, Ariz.
Philadelphia, Penn.-N. J.	Columbus, Ohio
Detroit, Mich.	Rochester, N. Y.
Boston, Mass.	Dayton, Ohio
Pittsburgh, Penn.	Louisville, Ky-Ind.
St. Louis, Mo.-Ill.	Sacramento, Cal.
Baltimore, Md.	Memphis, Tenn.-Ark.
Cleveland, Ohio	Fort Worth, Tex.
Houston, Tex.	Birmingham, Ala.
Newark, N. J.	Toledo, Ohio-Mich.
Dallas, Tex.	Akron, Ohio
Milwaukee, Wis.	Hartford, Conn.
Atlanta, Ga.	Oklahoma City, Okla.
Cincinnati, Ohio-Ky-Ind.	Syracuse, N. Y.
Buffalo, N. Y.	Jersey City, N. J.
Denver, Col.	Omaha, Neb.-Ia.
Indianapolis, Ind.	Grand Rapids, Mich.
San Jose, Cal.	Richmond, Va.
New Orleans, La.	

REFERENCES

- Advisory Commission on Intergovernmental Relations
1973 *City Financial Emergencies: The Intergovernmental Dimension*. Washington, D.C.: U.S. Government Printing Office.
- Alwin, Duane F. and Robert M. Hauser
1975 "The decomposition of effects in path analysis." *American Sociological Review* 40:37-47.
- Bradford, David F. and Harry H. Kelejian
1973 "An econometric model of the flight to the suburbs." *Journal of Political Economy* 81:566-89.
- Brown, Lawrence A. and Eric G. Moore
1970 "The intra-urban migration process: a perspective." *Geografiska Annaler* 52B:1-13.
- Butler, Edgar W., F. Stuart Chaplin, Jr., George C. Hemmens, Edward J. Kaiser, Michael A. Stegman and Shirley F. Weiss
1969 *Moving Behavior and Residential Choice: A National Survey*. National Cooperative Highway Research Program Report No. 81. Washington, D.C.: Highway Research Board, National Academy of Sciences.
- Clark, Terry N., Irene Sharp Rubin, Lynne C. Peltier and Erwin Zimmerman
1976 "How many more New Yorks? The New York fiscal crisis in comparative perspective." Report #72. Comparative Study of Community Decision Making. Department of Sociology, University of Chicago.
- Coleman, James S.
1976a "Response to Professors Pittigrew and Green." *Harvard Educational Review* 46:217-24.
1976b "Liberty and equality in school desegregation." *Social Policy* 6:9-13.
- Coleman, James S., Sara D. Kelly, and John A. Moore
1975 *Trends in School Segregation, 1968-73*. Washington, D.C.: Urban Institute.
- Congressional Quarterly Service
1967 *Urban Problems and Civil Disorder*. Special Report. No. 36 (September):3-6.
- deLeeuw, Frank, Ann B. Schnare, and Raymond J. Struyk
1976 "Chapter 3: housing." Pp. 119-78 in William Gorham and Nathan Glazer (eds.), *The Urban Predicament*. Washington, D.C.: Urban Institute.
- Droettboom, Theodore, Jr., Ronald J. McAllister, Edward J. Kaiser, and Edgar W. Butler
1971 "Urban violence and residential mobility." *Journal of the American Institute of Planners* 37:319-25.
- Duncan, Beverly, George Sabagh, and Maurice Van Arsdol, Jr.
1962 "Patterns of city growth." *American Journal of Sociology* 67:418-29.
- Duncan, Otis Dudley
1971 "Path analysis: sociological examples." Pp. 115-38 in H. M. Blalock, Jr. (ed.), *Causal Models in the Social Sciences*. Chicago: Aldine.
- Farley, Reynolds
1976a "Is Coleman right?" *Social Policy* 6:14-23.
1976b "Components of suburban population growth." Pp. 3-38 in Barry Schwartz (ed.), *The Changing Face of the Suburbs*. Chicago: University of Chicago Press.
1976c "Can governmental policies integrate public schools?" Paper presented at the 1976 annual meeting of the American Sociological Association, New York.
1977 "Residential segregation in urbanized areas of the United States in 1970: an analysis of social class and racial differences." *Demography* 14:497-518.
- Foley, Donald
1973 "Institutional and contextual factors affecting the housing choices of minority residents." Pp. 85-147 in Amos H. Hawley and Vincent P. Rock (eds.), *Segregation in Residential Areas*. Washington, D.C.: National Academy of Sciences.
- Frey, William H.
1978a "Population movement and city-suburb redistribution: an analytic framework." *Demography* 15:571-88.
1978b "Black movement to the suburbs: potentials and prospects for metropolitanwide integration." Pp. 79-117 in Frank D. Bean and W. Parker Frisbie (eds.), *The Demography of Racial and Ethnic Groups*. New York: Academic Press.
1978c "Class-specific white flight: a comparative analysis of large American cities." Presented at the Ninth World Congress, International Sociological Association, Uppsala.
1979 "White flight and central city loss: application of an analytic migration framework." *Environment and Planning-A*. In press.

- Gibbs, Jack P. and Maynard L. Erickson
1976 "Crime rates of American cities in an ecological context." *American Journal of Sociology* 82:605-20.
- Glenn, Norval D.
1973 "Suburbanization in the United States since World War II." Pp. 51-78 in Louis H. Masotti and Jeffrey K. Hadden (eds.), *The Urbanization of the Suburbs*. Beverly Hills: Sage.
- Goldstein, Sidney, and Kurt B. Mayer
1964 "Migration and the journey to work." *Social Forces* 42:472-81.
- Goodman, John L., Jr.
1974 "Local residential mobility and family housing adjustments." Pp. 79-105 in J. N. Morgan (ed.), *Five Thousand American Families: Patterns of Economic Progress*, Vol. 2. Ann Arbor: Institute for Social Research.
- Gorham, William and Nathan Glazer
1976 *The Urban Predicament*. Washington, D.C.: Urban Institute.
- Grodzins, Morton
1958 *The Metropolitan Area as a Racial Problem*. Pittsburgh: University of Pittsburgh Press.
- Guest, Avery M.
1972 "Population densities and higher status residential location." *Economic Geography* 48:375-87.
1975a "The journey to work: 1960-1970." *Social Forces* 54:220-5.
1975b "Workplace and residential suburbanization." Unpublished paper. Center for Studies in Demography and Ecology, University of Washington.
1976 "Occupation and the journey to work." *Social Forces* 55:166-81.
- Guterbock, Thomas M.
1976 "The push hypothesis: minority presence, crime, and urban deconcentration." Pp. 137-61 in Barry Schwartz (ed.), *The Changing Face of the Suburbs*. Chicago: University of Chicago Press.
- Hamilton, C. Horace
1964 "The Negro leaves the South." *Demography* 1:273-95.
- Harrison, Bennett
1974 *Urban Economic Development: Suburbanization, Minority Opportunity, and the Condition of the Central City*. Washington, D.C.: Urban Institute.
- Hermalin, Albert I. and Reynolds Farley
1973 "The potential for residential integration in cities and suburbs: implications for the bus-ing controversy." *American Sociological Review* 38:595-610.
- Hirsch, Werner Z.
1971 "The fiscal plight: causes and remedies." Pp. 3-40 in Werner Z. Hirsch, Phillip E. Vincent, Henry S. Terrell, Donald C. Shoup, Arthur Rosett (eds.), *Fiscal Pressures on the Central City: The Impact of Commuters, Nonwhites, and Overlapping Governments*. New York: Praeger.
- Kain, John F.
1965 "The journey to work as a determinant of residential location." *Papers and Proceedings of the Regional Science Association* 9:137-60.
1968 "Housing segregation, Negro employment, and metropolitan decentralization." *Quarterly Journal of Economics* 82:175-97.
- Kain, John F. and Joseph J. Persky
1969 "Alternatives to the gilded ghetto." *Public Interest* 14:74-87.
- Kasarda, John D.
1976 "The changing occupational structure of the American metropolis: apropos the urban problem." Pp. 113-36 in Barry Schwartz (ed.), *The Changing Face of the Suburbs*. Chicago: University of Chicago Press.
- Kasarda, John D. and George V. Redfearn
1975 "Differential patterns of city and suburban growth in the United States." *Journal of Urban History* 2:43-66.
- Kaufman, Ira R. and Leo F. Schnore
1975 "Municipal annexations and suburbanization, 1960-70." *Center for Demography and Ecology Working Paper* 75-4. University of Wisconsin, Madison.
- Lansing, John B. and Eva Mueller
1967 *The Geographic Mobility of Labor*. Ann Arbor: Institute for Social Research.
- Lemberg Center for the Study of Violence
1968a *Compilation of the 1967 Disorders*. Unpublished paper. Brandeis University.
1968b *Riot Data Review*. Numbers 1-3. Mimeo. Brandeis University.
- Levin, Charles L.
1978 *The Mature Metropolis*. Lexington: Lexington Books.
- Long, Larry H.
1972 "The influence of number and ages of children on residential mobility." *Demography* 9:371-82.
1975 "How the racial composition of cities changes." *Land Economics* 51:258-67.
- Manpower Report of the President
1974 Washington, D.C.: U.S. Government Printing Office.
- National Advisory Commission on Civil Disorders
1968 *A Report*. Washington, D.C.: U.S. Government Printing Office.
- Noll, Roger
1970 "Metropolitan employment and population distribution and the conditions of the urban poor." Pp. 481-509 in John P. Crecine (ed.), *Financing the Metropolis*. Beverly Hills: Sage.
- Orfield, Gary
1976 "Is Coleman right?" *Social Policy* 6:24-9.
- Peterson, George E.
1976 "Chapter 2: finance." Pp. 35-118 in William Gorham and Nathan Glazer (eds.), *The Urban Predicament*. Washington, D.C.: Urban Institute.
- Pettengill, Robert B., and Jogindar S. Uppal
1974 *Can Cities Survive? The Fiscal Plight of American Cities*. New York: St. Martin's.
- Pettigrew, Thomas F.
1973 "Attitudes on race and housing: a social-psychological view." Pp. 21-84 in Amos H. Hawley and Vincent P. Rock (eds.), *Segre-*

- gation in Residential Areas. Washington, D.C.: National Academy of Sciences.
- Pettigrew, Thomas F., and Robert L. Green
1976a "School desegregation in large cities: a critique of the Coleman 'white flight' thesis." *Harvard Educational Review* 46: 1-53.
1976b "A reply to Professor Coleman." *Harvard Educational Review* 46:225-33.
- President's Commission on Law Enforcement and Administration of Justice
1967 Task Force Report: Crime and Its Impact—An Assessment. Washington, D.C.: U.S. Government Printing Office.
- Roistacher, Elizabeth
1974 "Residential mobility." Pp. 41-78 in J. N. Morgan (ed.), *Five Thousand American Families: Patterns of Economic Progress*, Vol. 2. Ann Arbor: Institute for Social Research.
- Rossell, Christine H.
1975 "School desegregation and white flight." *Political Science Quarterly* 90:675-95.
- Rossi, Peter H.
1955 *Why Families Move*. New York: Free Press.
- Schnore, Leo F. and Hal H. Winsborough
1972 "Functional classification and the residential location of social classes." Pp. 124-51 in Brian J. L. Berry (ed.), *City Classification Handbook: Methods and Applications*. New York: Wiley.
- Schnore, Leo F., Carolyn D. André, and Harry Sharp
1976 "Black suburbanization, 1930-1970." Pp. 69-94 in Barry Schwartz (ed.), *The Changing Face of the Suburbs*. Chicago: University of Chicago Press.
- Snyder, David and William R. Kelly
1977 "School desegregation and declines in white enrollment: structural sources of North-South differences." Unpublished paper. Department of Sociology, Indiana University, Bloomington.
- Sørensen, Annemette, Karl E. Taeuber, and Leslie J. Hollingworth
1975 "Indexes of racial residential segregation for 109 cities in the United States, 1949 to 1970." *Sociological Focus* 8:125-42.
- Speare, Alden, Jr.
1970 "Home ownership, life cycle stage, and residential mobility." *Demography* 7:449-58.
- Speare, Alden, Jr., Sidney Goldstein, and William H. Frey
1975 *Residential Mobility, Migration and Metropolitan Change*. Cambridge, Ma.: Ballinger.
- Spilerman, Seymour
1970 "The causes of racial disturbances: a comparison of alternative explanations." *American Sociological Review* 35:627-49.
- Sternlieb, George and James W. Hughes (eds.)
1975 *Post Industrial America: Metropolitan Decline and Interregional Job Shifts*. New Brunswick: Rutgers Center for Urban Policy Research.
1978 *Revitalizing the Northeast*. New Brunswick: Rutgers Center for Urban Policy Research.
- Tarver, James D.
1969 "Migration differentials in southern cities and suburbs." *Social Science Quarterly* 50:298-324.
- Taeuber, Irene B.
1972 "The changing distribution of the population of the United States in the twentieth century." Pp. 29-107 in Sara Mills Mazie (ed.), *U.S. Commission on Population Growth and the American Future, Reports, Vol. 5. Population Distribution and Policy*. Washington, D.C.: U.S. Government Printing Office.
- Taeuber, Karl E.
1975a "Demographic perspectives on housing and school segregation." *Wayne Law Review* 21:833-50.
1975b "Racial segregation: the persisting dilemma." *Annals of the American Academy of Political and Social Science* 442:87-96.
- Taeuber, Karl E. and Alma F. Taeuber
1964 "White migration and socioeconomic differences between cities and suburbs." *American Sociological Review* 29:718-29.
1965a *Negroes in Cities*. Chicago: Aldine.
1965b "The changing character of Negro migration." *American Journal of Sociology* 60: 429-41.
- U.S. Bureau of the Census
1971 *Census of Population of Housing: 1970 General Demographic Trends for Metropolitan Areas 1960 to 1970. Final Report PHC(2)-1 United States*. Washington, D.C.: U.S. Government Printing Office.
1973a *Census of Population: 1970. Subject Reports Final Report PC(2)-2C. Mobility for Metropolitan Areas*. Washington, D.C.: U.S. Government Printing Office.
1973b *County and City Data Book, 1972*. Washington, D.C.: U.S. Government Printing Office.
1973c *Census of Population: 1970, Vol. 1. Characteristics of the Population*. Washington, D.C.: U.S. Government Printing Office.
- 1978 "Social and economic characteristics of the metropolitan and nonmetropolitan population: 1977 and 1970." *Current Population Reports. Ser. P-23, No. 75*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Commission on Civil Rights
1967 *Racial Isolation in the Public Schools*. Washington, D.C.: U.S. Government Printing Office.
1974 *Directory of Public Elementary and Secondary Schools in Selected Districts, Fall 1972*. Washington, D.C.: U.S. Government Printing Office.
- Zimmer, Basil G.
1975 "The urban centrifugal drift." Pp. 23-91 in Amos H. Hawley and Vincent P. Rock (eds.), *Metropolitan America in Contemporary Perspective*. Beverly Hills: Sage.
1976 "Suburbanization and changing political structures." In Barry Schwartz (ed.), *The Changing Face of the Suburbs*. Chicago: University of Chicago Press.

MEAD VS. BLUMER: THE DIVERGENT METHODOLOGICAL PERSPECTIVES OF SOCIAL BEHAVIORISM AND SYMBOLIC INTERACTIONISM*

CLARK MCPHAIL AND CYNTHIA REXROAT

University of Illinois

American Sociological Review 1979, Vol. 44 (June):449-467

An examination of the methodological perspectives of Mead and Blumer establishes considerable divergence in emphasis and consequence. Their diverse epistemologies rest upon equally diverse ontological assumptions. Blumer's naturalistic inquiry neither compliments Mead's methodological perspective nor facilitates the examination of Mead's theoretical ideas. Several experimental studies of "taking the attitude of other" are discussed, one by Mead's student Leonard S. Cottrell, which are consistent with Mead's methodological perspective. That perspective is equally applicable when exploratory-descriptive research is required. Many problems of naturalistic methodology are avoided by recognizing the different domains of meaning for investigator and investigated, by reducing the scope of behavior to be examined, and by increasing control of the investigator's behavior regarding that which is examined. An illustrative study is discussed.

INTRODUCTION

Although Herbert Blumer (1936:518; 1937:153) coined the term *symbolic interaction*, George H. Mead is an assumed forefather of this school of sociological social psychology. It also is widely assumed, by critics (e.g., Huber, 1973a) and by proponents alike (e.g., Stone et al., 1974), that the theory and methodology of Blumer's symbolic interactionism is the contemporary extension and manifestation of "the Meadian tradition." Both assumptions are false. Lewis (1976) has documented the diverse philosophical origins of Blumer's symbolic interactionism and Mead's social behaviorism. Bales (1966), Stewart (1975), and Stryker (1977) have noted but a few of many theoretical differences. The primary objective of the

present paper is to demonstrate the divergent methodological perspectives of Mead and Blumer.

We proceed by comparing Mead's and Blumer's characterizations and analyses of scientific inquiry. Mead's emphasis on systematic observation and experimental investigation is quite different from Blumer's naturalistic methodology. We attribute the striking epistemological differences to their disparate ontological assumptions and the application of those assumptions. Further, Blumer's ontology contradicts a basic premise of the theoretical perspective his epistemology was developed to investigate. Naturalistic inquiry neither compliments nor extends Mead's methodological perspective, nor is Blumer's framework suited to the investigation and development of Mead's theoretical ideas.

A second objective is to advocate and illustrate the investigation of Mead's theoretical ideas in terms of the methodological perspective he set forth. We note several studies by sociologists and others which are consistent with Mead's methodological perspective and which refute the belief that his most important theoretical ideas are beyond the empirical pale.

A third objective is to discuss some implications of Mead's methodological per-

* Direct all communications to: Clark McPhail; Department of Sociology; University of Illinois; Urbana, IL 61801.

An earlier version of this paper was presented at the 1975 annual meeting of the Midwest Sociological Society, Chicago. Numerous colleagues have since commented on the paper and we are grateful for their interest and effort. We particularly thank Charles W. Tucker (1969) for raising the issue and for providing, along with Robert L. Stewart, informed and constructive criticism. Neither may agree with all we have written here. We also thank J. David Lewis and Richard L. Smith who joined us in a 1974 seminar at the University of Illinois and with whom we have learned much about Mead's written work.

spective for redressing the problems of naturalistic methodology. Particular attention is given to the different "domains of meaning" for investigators and investigated, and, to variations in the investigator's scope and control of inquiry in exploratory-descriptive and experimental research. Melbin's (1972) study of interpersonal behavior illustrates several advantages of the application of a Meadian behavioral perspective to exploratory-descriptive research.

THE EPISTEMOLOGICAL PERSPECTIVES

Mead's concern with scientific epistemology developed early and remained central throughout his scholarly career. He had published several articles (1894; [1900; 1906; 1917] 1964) by the time Blumer (1928) completed his doctoral dissertation on "Method in Social Psychology."¹ A number of Mead's additional articles, typescripts and lectures (e.g., [1927] 1964; 1936; 1938a; 1938b) were available prior to Blumer's (1969:1-2) assertion that he was compelled to develop a symbolic interaction methodology to deal "... explicitly with many crucial matters that were only implicit in the thought of Mead." It is not clear by what criteria Blumer made his judgment that Mead's methodological perspective was "implicit" in his written work.² Our comparison of their respective

epistemologies will establish that Mead's position is far more detailed and explicit than Blumer suggests. It is also quite different from the position Blumer felt compelled to develop.

We draw primarily upon Mead's articles (e.g., [1917] 1964), typescripts (e.g., 1938b), and stenographic lecture notes (e.g., 1936, vs. student lecture notes, e.g., 1934), and upon Blumer's principal methodological statement (1969) and related articles (e.g., [1931; 1940; 1954] 1969). We first compare and contrast their respective positions on the antecedents and the initiation of scientific inquiry, followed by their discussions of the development and examination of hypotheses, and, the consequences for scientific knowledge.³

Antecedents of Scientific Inquiry

Mead and Blumer recognized antecedent theories, premises or beliefs are necessary presuppositions for individual scientific experience and investigation. Their respective emphases, however, are quite different. Mead's (1934:7) social behaviorism was an attempt to explain individual conduct and experience in terms of the antecedent and ongoing organized conduct of the social group. Thus, in his view of scientific epistemology, "... individual experience presupposes the organized structure" ([1917] 1964:203). That structure is not acquired inductively but is taught through formal instruction or through reading the theories and findings of preceding scholars (1938a:50). According to Mead, modern science holds that all theories are provisional (1938a:56); that extant scientific laws or beliefs are benchmarks in terms of which discrepancies or exceptions are experienced by the individual scientist ([1917] 1964:207); that exceptions should not be ignored but

¹ With few exceptions (e.g., McKinney, 1954; 1955; Huber, 1973a; Lewis, 1976; Lewis and Smith, 1980) sociologists do not acknowledge and seem generally unaware of Mead's extensive writings on scientific inquiry or, for that matter, any of his ideas beyond those in *Mind, Self and Society* (Spreitzer and Reynolds, 1973). In response to McKinney's (1954) paper on "Methodological Convergence of Mead, Lundberg and Parsons," Lundberg (1954:183-4) wrote: "McKinney's discovery will doubtless be a great shock to those whose careers as sociological theorists rest upon hearsay and imagination rather than on a serious perusal of the texts in question."

² We do not know the extent to which Blumer scrutinized the full range of Mead's writings and lectures on scientific inquiry. Blumer's (1928) dissertation makes several references to Mead's ([1917] 1964) "Scientific Method and Individual Thinker," one of four articles on scientific inquiry Mead had written at the time. Blumer's subsequent writings cite Mead's ([1917] 1964) article on two occasions (Blumer, 1973:797; 1977:289) but make no

further references to Mead's additional articles, manuscripts, or lectures on science published after Mead's death (e.g., Mead, 1932; 1936; 1938a; 1938b).

³ The phases of scientific inquiry in terms of which Mead organized his own discussion are found in his "Logical Analysis of the Experimental Method" (1938b). Blumer's phases are found in his (1969) statement on "The Methodological Position of Symbolic Interactionism."

should be acknowledged and stated as contradictions to be explained ([1917] 1964:173); and, that theories and beliefs are sources of alternate hypotheses to address those contradictions (1938a:56).

Blumer concedes that study of the empirical world presupposes some prior scheme through which research scholars view the world. Such a scheme includes both theories and beliefs about the phenomena to be investigated (e.g., the three theoretical premises of Blumer's [1969:2] symbolic interactionism) as well as beliefs about the nature of the empirical world which, in turn, affect how investigation will occur (1969:36). Blumer's characterization and analysis of the role of antecedent theory is erratic. On the one hand he is less sanguine than Mead with the adequacy of existing behavioral scientific theories, laws and beliefs. Extant theories cannot provide benchmarks when the majority of theoretical concepts are too vague and ill-defined to be used in scientific inquiry ([1954] 1969:138). Blumer says these concepts, at best, may serve as "sensitizing concepts" in a preliminary exploration of the empirical world. This may result in the development of more "definitive concepts." Yet, on the other hand, Blumer ([1940] 1969:181) warns of the "... risk and danger that the [theoretical] concept may coerce judgment and determine what is seen." He (1969:41) warns investigators to beware "imprisonment" by their antecedent theoretical schemes. It is not clear whether Blumer's warnings are superfluous, given his assessment of social science concepts, or if they are admonitions to avoid the development of definitive but coercive concepts.

Initiating Inquiry

Mead, and initially Blumer, construed the initiation of scientific inquiry as a matter of problem solution. Blumer's position has shifted across time and has never been as explicit or complete as Mead's analysis.

Mead (1938b:82) defines a problem as "the checking or inhibition of some more or less habitual form of conduct, way of thinking or feeling." Some aspect of the

scientist's system of beliefs or practices breaks down ([1917] 1964:198). This may involve an exception to or breakdown of a theory, law, hypothesis, unit of analysis, equation, or some piece of equipment. No area or phase of the scientist's activity or experience is immune (1936:264-5).⁴ Whereas the routine and ordinary escapes attention and scrutiny, the exceptional and extraordinary captures the attention of the puzzled investigator ([1917] 1964:190) and gives rise to such questions as: How can this activity be continued? What is the solution to this puzzle? How does this come about? Such questions provide occasions for creating hypotheses whose empirical investigation may reconstruct the empirical world and thereby modify or supplant existing laws, theories or beliefs.⁵ Such creative occasions distinguish the experimental method of modern science ([1917] 1964:189; 1936:264-6).

Blumer's ([1931] 1969) early writing construed problems as "puzzling perceptual experiences," as "frustrated activity," or as "situations requiring solution or adjustment." But his more recent writings have reversed the problem-question sequence: scientific inquiry is said (1969:25) to begin by "asking questions of the empirical world and the conversion of those questions into problems."

While it may be argued that the sequence of problem and question is not crucial, it is clear that Mead and Blumer provide quite different analyses of what is required to prepare a problem for resolution. The scientist should (Mead, 1938b:82) "state the problem in terms of the conditions of its possible solution." Where a law, theory or belief has been found exceptionable, the problem should be so stated (1936:283). One should pro-

⁴ But Mead ([1917] 1964:200) cautions confusing the "scientific attitude of being ready to question anything with an attitude of being willing to question everything at once." Scientific inquiry would be impossible without some unquestioned and stable ground on which to stand, from which to judge some other activity problematic, or, upon which to construct a solution or redress of the problem.

⁵ Mead does not distinguish, as does Kuhn (1962), between the "puzzle-solving activities" of normal science, and the anomalies which are goads to scientific revolutions.

duce descriptions of as many instances of the problem as possible and thereby increase the facts known about the problem (1936:283-4). The greater one's familiarity with the phenomenon, the more likely one is to recognize the problematic features with which an adequate hypothesis must deal (1936:284). Notwithstanding the investigator's individual and private experience of the problem, it must eventually be rendered social; that is, the scientific existence of the problem depends on others' acceptance of the report of the person who initially experienced the exception or discrepancy ([1917] 1964:196). The investigator must provide the "circumstantial evidence" of the conditions of the exception such that others might have a similar experience and provide a report similar to that of the initial investigator. And this should not depend upon personal whim or fancy ([1917] 1964:196-7):

In other words, those individuals who corroborate the facts are made in spite of themselves, experiencers of the same facts. The perfection of this evidence is attained when the fact can happen to others and the observer simply details the conditions under which he made the observation, which can be then so perfectly reproduced that others may repeat the exceptional experience.

Blumer (1969:25-6) has appropriately observed that most scientists have little familiarity at the outset of their inquiry with that portion of the empirical world in which their problem lies. Blumer concedes no substitute for getting close to this empirical world to gain that familiarity (1969:27). He has proposed a two-stage procedure for accomplishing such an examination. *Exploration* or description is the first stage and the objective is to:

... enable the scholar to ... talk from fact and not from speculation ... so that he knows that the questions he asks of the empirical area are meaningful and relevant to it, that the problem he poses is not artificial, that the kinds of data he seeks are significant in terms of the empirical world, and that the leads he follows are faithful to its nature. (1969:42)

We noted Blumer's disdain for the majority of social science concepts and the "sensitizing" role he assigns them in the preliminary exploration phase of in-

quiry. These may be refined in the second stage of inquiry—*inspection*—where the investigator *discovers* the analytic elements or conceptual categories with which she or he will subsequently work. Again, Blumer's treatment of the nature of such analytic units has shifted across time. In an early paper he wrote that the character of an observed act is "lodged there through a process of inference" ([1940] 1969:179). In his methodological position statement, however, he argued (1969:45) that inspection and pursuant concept development do not involve "giving a nature" to the analytic element; rather, it is a matter of discovering or identifying "the nature of the analytic element by an intense scrutiny of its instances in the empirical world" (1969:45). Blumer's position corresponds to the Aristotelian conception of observation of which Mead ([1917] 1964:183-4) was so critical. For Mead, modern science emphasizes the controlled perception of observed fact and the controlled reconstruction of a perceived world. Aristotelian observation emphasized the insight with which an observer could recognize the nature of the object, analyze that into essences and formulate those into a definition of the object. Such an emphasis precludes the reconstruction of observed fact and the expansion of knowledge. In short, Blumer and Mead agree the solution of a problem cannot be achieved until one is first familiar with the problem to be resolved. But Mead, unlike Blumer, requires and discusses procedures for the controlled perception of observed facts and for establishing scientific problems as social objects.⁶

Hypotheses

Mead ([1917] 1964:198) treats the hypothesis as a tentative solution to a prob-

⁶ Blumer neither is unaware of these issues nor of crude procedures with which they could be addressed. But he has given them such scant attention (e.g., 1928:410; [1940] 1969:179), or has discussed them in such obscure locations (1969:45, fn.) that we can only conclude he considers them unimportant. This is a point on which Blumer's critics have made properly sharp attacks (cf. Huber, 1973a; and, particularly, 1973b: "But Who Will Scrutinize the Scrutinizers?").

lem, an "escape from the exception." It is an answer to the question: How did this exception come about (1936:284)? The hypothesis is characterized as "some possible representation, restatement or reconstruction of the situation in which the data or facts will no longer inhibit action, thought or feeling" (1938b:82).⁷ Mead recognized the individual as the source of those exceptional experiences which establish problems as well as the source of hypothesized solutions to those problems ([1917] 1964:207). But he did not construe hypotheses as individualistic, particularistic or atheoretical exercises. Theories are sources from which hypotheses (1938a:56) develop, and such ideas (1938b:82) represent efforts to test competing theories or portions thereof (1938a:84-6). Although one after another hypothesis may prove faulty, be abandoned, and others may be required, none can be considered a tenable research instrument unless cast in universal form ([1917] 1964:198): "No one would waste time with a hypothesis which confessedly was not applicable to all instances of the problem." Finally, Mead (e.g., [1917] 1964:193) consistently suggested that hypotheses be subject to empirical test.

Blumer avoids the term *hypothesis*. In the exploration stage Blumer's ([1931] 1969:166) investigator works with a theoretically primitive sensitizing concept which represents a "mode of attack or a plan of approach to the situation . . . requiring solution or adjustment." The inspection stage of inquiry may refine that concept and establish an analytic component. The next task is to isolate relationships between analytic components. This "presumes the existence of a meaningful connection between components in the empirical world" (1969:46, Blumer's emphasis). The connection, like its analytic components, is not assigned or hypothesized. It is discovered, " . . . pinned down and tested by careful flexible scrutiny of its empirical instances"

(1969:46). Whereas Mead treats hypotheses as the beginning of an empirical resolution of the problem of inquiry, Blumer seems to treat the discovery of a relationship between analytic components as the termination of the empirical resolution. Whereas Mead's treatment of hypotheses is theoretically grounded, though not formally deductive,⁸ Blumer's treatment is virtually atheoretical, inductive empiricism.

Examining Hypotheses

Mead's analysis of scientific inquiry discusses the examination of hypotheses by means of experimental and nonexperimental observation as well as with "thought experiments."⁹ The experimental method "undertakes to tell us what we may expect to happen when we act in such and such a fashion" ([1917] 1964:210) under "specific, exact and hence formally universal" conditions the investigator has identified or constructed (1938b:82).¹⁰ Some critics (e.g., Huber, 1973a:278) have charged that Mead treats the experimental method as merely an extension of the everyday processes of trial-and-error problem solution employed by all higher primates. Such criticism ignores Mead's

⁸ Mead (1938b:83) recognized the inductive/deductive strategy is never clear-cut: "Indeed, all formulations of problems are deductive, whether we undertake their solution or not, but [in the impractical situation requiring 'thought experiments'] . . . the method of approach seems [necessarily] to be entirely deductive."

⁹ Mead recognized that experimental tests of hypotheses are not always practical or possible in all fields of scholarship. The problem of inquiry may be considered inevitable or insoluble. Or the community may be afraid to have situations manipulated because of the social reorganization which might occur (1938b:83). In such situations the "mental testing of the hypothesis" (1938b:82), or the "thought experiment," provides a procedure for the logical examination of relational statements in the form of the syllogism, testing past experience to ascertain the consequence of taking future hypothetical action (1938a:85; cf. Kuhn's discussion, 1962:88). It can be argued that correlation studies are of this sort.

¹⁰ Mead ([1906] 1964) considered experimental analysis to be the method of modern science. He did not construe experiments as techniques of data collection and analysis but as requirements and procedures for generating knowledge. See his (1938) "Logical Analysis of the Experimental Method."

⁷ Where the problem is a factual exception to some hypothesis, law or theory, the superceding hypothesis must account for the exceptional facts, the facts accounted for by the superceded hypothesis, and, the superceded hypothesis itself (1938a:39).

(1938b:82) emphasis on "the careful exactness with which the problem is defined, the data gathered, and the experiment carried out" by the investigator. Mead (1932:101; 1936:406, 415; 1938a:40) also stressed the investigator's obligation to specify the criteria and procedures enabling others to replicate and reject or corroborate the investigator's actions and reported consequences.

Blumer (1969:28-31) rejects "the four customary means" of empirically validating relationships between analytic components. "Hypothesis testing" is rejected (1969:29-30) because it seldom "genuinely epitomizes the model or theory from which it is deduced," because it neglects the search for negative cases, and because it is limited to the particular empirical situation circumscribed by the hypothesis rather than extending to other relevant empirical situations. Blumer (1969:28-9) rejects "adherence to scientific protocol" because it provides no guarantee that the investigator's premises, problems, data, relationships, concepts and interpretations are "sustained by the nature of the empirical world." Similarly, Blumer (1969:30-1) rejects "operational procedures" because they are "regularized" and have too limited a range of empirical referents to allow true validation. The consequence of this is that Blumer (1969:29) also rejects "replication studies" because they beg the question if the primary study was without valid grounding in the empirical world.

In short, Blumer rejects all that Mead requires. Blumer neither discusses or requires procedures for corroborating the problem solution an individual investigator may claim to have achieved. Instead he argues that exploration and inspection alone are necessary to ascertain relationships between analytic components in the empirical world (1969:46):

They comprise what is sometimes spoken of as "naturalistic" investigation—investigation that is directed to a given empirical world in its natural, ongoing character instead of to a simulation of such a world, or to an abstraction from it (as in the case of laboratory experimentation).

To the contrary, Mead (1938a:35) chastizes critics of experimental research.

It is a mistake to emphasize the artificiality of the experimental apparatus and technique of the psychological laboratory. As in the case of the laboratories of the physical sciences, the building of its apparatus and its techniques is but rendering specific, exact and hence formally universal the instruments and behavior of untechnical conduct.

Experiments rest upon the systematic observation of the consequences of the investigator's activities for the phenomena under study ([1917] 1964:210). Mead (1934:2) characterized his social behaviorism as "an approach to the study of the experience of the individual from the point of view of his conduct, particularly, but not exclusively, the conduct as it is observable by others." He did not construe observation as a matter of recording "the natural ongoing character" of things. Observation ". . . is not simply the opening of one's eyes and seeing things as the images happen to fall on the retina" (1938a:283), nor is it merely "opening one's ears and listening to what may occur" (1936:281). Rather, observation is guided by the problems or interests of the investigator ([1917] 1964:192) who is actively and selectively "discriminating" (1938a:350) what is to be observed.¹¹

Just as Mead (1938a:40) stressed others' corroboration of the problem, so too must others verify the investigator's report of the consequences of his or her hypothesis: "It is in the mouths of at least two witnesses that [these observation reports] must be confirmed." Science is social behavior! Others should not be expected to accept the new hypothesis as a matter of blind faith nor as a "deduction from accepted impersonal premises" (1938a:40). The investigator must specify the conditions to be met and the actions to be taken such that others, through their conduct, can experience, must observe, can confirm or reject the reported observations of the investigator (1936:406, 415). "The reality of this experience of his, and of others carrying out the experiment, is the

¹¹ "What we call 'discrimination' [is] the pointing out of things and the analysis in this pointing. This is a process of labeling the elements so that you can refer to each under its proper tag, whether that tag is a pointing of the finger, a vocal gesture, or a written word" (Mead, 1938a:350).

cornerstone of experimental science" (1932:101).

The Consequences of Scientific Inquiry

Blumer's treatment of the theoretical consequences of inquiry is as equivocal as his discussion of the theoretical antecedents. On the one hand he has argued ([1954] 1969:148) that every object of empirical consideration has a distinctive character. This would seem to preclude the development of abstract concepts and universal statements of relationship between such concepts (cf. 1969:45; but also see [1954] 1969:140-1). Nonetheless, Blumer (1969:26) calls for the scientist to move beyond the empirical findings from a problem's investigation to some transcending theory or outside conceptual scheme. Once relationships between analytic components have been discovered, Blumer's (1969:48) investigator is directed to formulate propositions, weave these into a theoretical scheme, and submit all to test by renewed examination of the empirical world. Perhaps Blumer is simply calling for theory development by analytic induction. The empirical test of theoretical generalizations, however, seems precluded by his rejection of scientific protocol, operational procedures, hypothesis testing or replication studies. Ostensibly, exploration and inspection can suffice (1969:46).

Mead (1936:285) made explicit and consistent references to the consequences of hypothesis testing for the body of theory within which the investigator has worked.

You are undertaking to set up another law in place of the one which has been overthrown. The new law is tentatively set up as a hypothesis. You test it. When you have tested it, it becomes a working hypothesis. And if others test it and it works, it becomes an accepted theory. But, although it is an accepted theory, it is still subject to some other chance exception.

The Epistemologies Reviewed

Blumer's characterization of and recipe for naturalistic inquiry neither extends nor explicates Mead's analysis of scientific inquiry. Mead stressed antecedent theory

as a source of benchmarks against which exceptions are noted in individual experience as problems which occasion inquiry and solution. Such individual experiences presume the organized structure of antecedent theory. Blumer vacillates between orienting and confining consequences of existing theory but generally disparages the quality of that theory and opts for an ad hoc approach.

For both Mead and Blumer the problematic exception requires careful observation and description to establish or grasp those features of the phenomenon with which the investigator's proposed solution must deal. Thereafter, Mead's and Blumer's emphases increasingly diverge. Mead treated the hypothesis as an escape from the problematic situation, and, hypotheses require observation, experimental or logical test by the investigator and then by others. Blumer eschews the term *hypothesis*, not to mention the specification of criteria and procedures by which hypotheses could be tested. Blumer emphasizes the discovery of analytic elements and relationships among them in a two-stage process of naturalistic inquiry. His concern is with encompassing observations that preserve the natural character of the real, ongoing empirical world. Mead stresses "the controlled perception of observed facts," and repeatedly emphasizes the necessity of corroborated factual statements of the problem as well as corroborated observations of the hypothesized resolution of that problem. Blumer ignores corroboration.

Blumer's epistemological perspective lends itself to repeatedly starting inquiry anew (others' theoretical schemes are inadequate guidelines) or of retracing the same ground (by renewed empirical examination of the relationships one uncovers and weaves into a theoretical scheme). There is no sense of "normal science" (cf. Kuhn, 1962) in which knowledge is corroborated and accumulated across investigators. Conversely, Mead's perspective emphasizes the corroboration of individual experience and the social accumulation of knowledge which this allows; he recognizes that (1936:286): "No statement that science makes is final There is

always some possible reconstruction that can take the place of it The law is dead! Long live the law!"

Discussion

One explanation for the divergence of Mead's and Blumer's methodological perspectives is that Mead's views are restricted to the physical and biological sciences. Some symbolic interactionists (e.g., Meltzer [1964] 1972:21) have even asserted that Mead made "no specific recommendations as to the techniques appropriate to the study of human behavior." Such assertions may stem from a lack of familiarity with Mead's extensive writings on scientific inquiry or from a rejection of their applicability to human behavior. Blumer has rejected the use of established scientific protocol (1969:28-9) and has cautioned against the emulation of physical science (1969:34) in the study of human behavior. The apparent reservation is that scientific protocol prevents the investigation of human actors' meanings and interpretations whereas proper inquiry (Blumer, 1966:542; 1969:56) would have the investigator "take the attitude" of the investigated and thereby similarly perceive and interpret the latter's situation and behavior. Such reservations may have led to the erroneous conclusion (Blumer, 1969:1) that a methodology for the study of human behavior was at best implicit in Mead's writings, thereby compelling Blumer to develop one of his own.

We reject Blumer's conclusion and the assumptions on which it rests. First, Mead construed scientific inquiry as the explicit and formal extension of the everyday processes of intelligent problem solution to all areas of human inquiry, including those of human conduct and experience (cf. Mead [1906] 1964:61; [1917] 1964; [1923] 1964:246-65; 1936). Second, Mead's (1934:2) social behaviorism is an approach to human experience through behavior, and not the other way around!¹² Third, those

sacrosanct human qualities some symbolic interactionists have held above and beyond the scrutiny of scientific inquiry, Mead simply construed as behaviors in which humans engage. Thus, "the meaning of the object is derived entirely from our reaction upon it, or, in other words, our use of it" ([1900] 1964:8). "Interpretation . . . is not basically a process going on in the mind as such, or one necessarily involving a mind; it is an external, overt, physical or physiological process . . ." (1934:48-9). Similarly, "taking the attitude of the other" is construed ([1912] 1964:140; [1913] 1964:145-6; [1922] 1964:243; [1924-25] 1964:380-1; [1927] 1964:312) as a behavioral or physiological process in which the individual responds to his/her own gestures (or to other's gestures) as other responds. In short, no unique methodology is required to study human behavior, at least not in terms of Mead's theoretical perspective.

A second explanation for the divergent epistemologies is that Blumer's perspective is limited to the exploratory-descriptive research which must precede the hypothesis testing and experimental work with which Mead was concerned. Although Blumer (1969:46) explicitly disavows such limitations on his perspective, this interpretation has mixed merit. It is the case that social and behavioral scientists too frequently proceed to test hypotheses before they have sufficient descriptive familiarity with phenomena they seek and claim to explain.¹³ Unfortunately, there are too many flaws in Blumer's methodological perspective to facilitate the quality of exploratory observation and description on which sub-

"It is much safer . . . to come back to the conduct of the individual if you are going to study him than to come back to something he reports to you by means of introspection."

¹³ Blumer's pleas for investigating "the real empirical world" must be placed in the context of his career which paralleled the attrition of direct sociological research contact with the phenomena of interest. Detailed case studies increasingly were replaced by survey research, magnetic tapes and secondary analyses. Blumer may have been incensed at the increasing number of sociological pathologists who never observe or speak with a live human subject but merely scrutinize residual data in *computer*.

¹² Most symbolic interactionists, following Blumer, have twisted Mead back to front on this point. They have insisted on an introspective approach which Mead (1936:400) explicitly rejected:

sequent investigations must build. We attribute those flaws to the ontological assumptions Blumer makes about what is to be observed and about the observation process itself. Our discussion of some alternatives to naturalistic observation and description must await consideration of these basic ontological issues.

A third explanation attributes Mead's and Blumer's epistemological differences to their ontological assumptions and the uses to which those assumptions are put. All recipes for generating knowledge rest upon assumptions about reality. Both Mead (e.g., 1936; 1938a:276-300) and Blumer (e.g., 1969:36, 60) discuss the ontological assumptions of scientific epistemology. The closing injunction of Blumer's (1969:60) major methodological essay reiterates the importance in which he held such assumptions: "Respect the nature of the empirical world and organize a methodological stance to reflect that respect." We have reviewed Mead's and Blumer's epistemological stances. We turn now to an examination of the ontological assumptions on which those diverse stances have been organized.

ONTOLOGICAL ASSUMPTIONS AND APPLICATIONS

Mead (1936) traces the development of modern science and the accompanying rejection of realism and idealism at the turn of the century. He advances pragmatism as an alternative to those ontological positions and as the logical generalization of scientific methodology and behavioral psychology. Mead (1932:275) concedes we might imagine a disorderly world but denies we can imagine a world that is not there. Reality is a presupposition of all scientific inquiry, indeed of all thinking (1938a:275). But science is not concerned with the nature of reality (1936:275); rather, science is concerned with "ordering the events it observes." Investigators' responses impose order on observed events. Those events are not solipsistic inventions. The manipulatory phase of the act meets a resistance which answers to the preceding perceptual phase of that act (1938a:104-5). While the scientist assumes the reality of perceptions

(1932:140), of recording instruments (1932:150), and of the events predicted by hypotheses (1932:140), "[c]ontrolled sensuous experience is the essential basis of all our science" ([1903] 1964:34). It is the social and behavioral control of experience that characterizes the ontological assumptions of Mead's pragmatism, and provides the basis for his view of scientific inquiry.

Blumer (1969; 1977) claims the ontological position of pragmatism, but Lewis (1976; 1977) demonstrates that Blumer's version is derived from James and Dewey and is quite different from the pragmatism of Peirce and Mead. Blumer (1977), of course, vehemently denies any divergence from Mead. But our examination of his writings suggests he waffles amongst the ontological assumptions of both realism and idealism. On the one hand (1969:46) his naturalistic inquiry is concerned with "the natural, ongoing character" of the empirical world which can "talk back . . . challenging and resisting . . . not bending to our images or conceptions of it" (1969:22). On the other hand he has written that the world of reality depends on how it is perceived (1977:287) and exists only in human experience (1969:22). Blumer's vacillation beds him down with both idealists and realists. He simply never adopts the social behaviorist perspective by which Mead's pragmatism transcends the idealist-realist gap.

Mead's ontological assumptions logically extend to his characterization of meaning as response ([1900] 1964:8), and of shared meaning (1934:78), scientific universals (1938a:275) or laws (1936:285) as convergent responses. It is never clear how Blumer defines meaning or shared meaning.¹⁴ It is clear he fails to do so in terms of behavior or convergent behaviors.

¹⁴ Blumer "explains" that "the meaning of a thing for a person grows out of the ways in which other persons act toward a person with regard to the thing" but he does not provide a definition of meaning, let alone a behavioral definition. Similarly, he "explains" that shared meaning "arises in the process of interaction between people," but he does not define it nor tell us how to recognize it when it occurs. Thus, in spite of the significance of meaning to Blumer's theory of human behavior, he provides neither a definitive nor a sensitizing conceptualization to assist in its empirical description and analysis.

He clings to reality with one hand and hails the subjective experience of the individual with the other. For example, his recent discussion of Mead's ontological position properly claims the meaning of "a reality that is 'out there'" is contingent upon the perspective of the perceiver (1977:287). But Blumer predictably neglects Mead's social and behavioral treatment of perspectives. He incorrectly attributes to Mead the notion that (1977:287) "because the perspective outlines or indicates something 'out there,' the perspective has an objective character." To the contrary, Mead's discussion of the "objective reality of perspectives" ([1927] 1964:315-6, 318) emphasized "the relation of a consentient set [conjoined judgments] to a percipient event [something that can be perceived]." Objectivity of perspectives is not contingent upon a perceptible event, as Blumer suggests, but upon a convergent response to such an event!

Blumer (1977:289) insists on characterizing Mead's treatment of scientific inquiry as "an individual act." This is an error. We recognize that Mead's ([1917] 1964:196) essay on "Scientific Method and Individual Thinker" lauds individual experience as the growing point of science, both in the recognition of exceptional facts which fracture extant theory, and in the generation of alternative hypotheses to transcend the exception. But Blumer fails to recognize Mead's ([1917] 1964:196) requirements that exceptional facts and their circumstances be so described by the initial investigator that others will experience the facts, and, that the investigator's working hypothesis be set forth for and corroborated by others. Just as the initiation of individual scientific inquiry "presupposes an organized structure" ([1917] 1964:203), the continuity of scientific inquiry requires that individual experience be rendered social. Any object remains subjective so long as it is indicated by an individual solely to him or herself ([1922] 1964:242). It is the "coincidence of the perspective of the individual with the perspective of others" which constitutes the objectivity of the perspective ([1927] 1964:318). And, "the character of [scientific universals] arise[s]

out of the social attitude of the individual [investigator] toward the world" (1938a:275), and not out of the nature of the world.¹⁵ Given the concern of science (1936:275) with "ordering the events it observes," the investigator must direct others to respond as he or she has responded. Mead proposed the significant symbol as the mechanism for accomplishing these convergent responses, coincident perspectives, and scientific universals.

Mead ([1927] 1964:312) defined the significant symbol as "a gesture [which] arouses the same response in the individual who makes it that it arouses in others." The vocal gesture is preeminent because of the simultaneity with which speaker and hearer perceive the gesture; but similar consequences can occur with gestures we can see or feel ([1922] 1964:243). "We hear what we say; if we are talking with our fingers we see what we are saying; if with the attitudes of the body, we feel what we are saying" (1936:379). For social intercourse in general, and science in particular, "the individual can indicate to others and to himself the perceptual things that can be seized and manipulated and combined" ([1927] 1964:314-5). Objects can be established ("pointed out") for others as they have been established by and for the individual (1936:287), and the individual can direct others to respond to the objects as the individual has responded or is responding (1936:380). These directions, and the convergent responses they produce, are the social behavioral mechanisms of the ontological assumptions upon which Mead's methodological perspective is constructed.

Blumer attends to neither the convergent responses which constitute the objective reality of perspectives nor to the significant symbols responsible for those convergent responses. Mead's (1936:275)

¹⁵ In the usage of his times, Mead ([1924-25] 1964:286-7) defined attitudes as vocal and non-vocal gestures: "stages in the act as they appear to others, [including] expressions of countenance, positions of the body, changes in breathing rhythms, outward evidence of circulatory changes, and vocal sounds." Thus, social attitudes are convergent behavioral responses by the investigator and other(s).

ontological perspective dismisses any concern with the "nature" of observed events. Rather, the investigator is required to provide directions which will occasion the convergent responses which order observed events. Blumer's ontological perspective, if anything, requires the opposite. He directs investigators (1969:39, 45) *not to assign but to discover the nature of their concepts*. They are directed *not to impose relationships* upon their analytic components *but to discover them* through intense scrutiny of the empirical world, presuming "the existence of a meaningful connection between the components in the empirical world" (1969:46).¹⁶ Blumer (1969:29) insists that ordinary scientific protocol will not suffice because its constituent elements might not be "sustained by the nature of the empirical world." Rather, a naturalistic investigation is addressed to the "natural, ongoing character" of the empirical world (1969:46), "lifting the veils that obscure or hide what is going on" (1969:39), and thereby digging out and discovering "the nature of the empirical world" (1969:48). The consistent respect in which Blumer holds "the nature of the empirical world," and his lack of attention to investigators' convergent responses and the instructions which produce them, give us the ontological assumptions upon which his naturalistic methodology is constructed.

Blumer's Ontological Paradox

Symbolic interactionists traditionally have rejected the notion that inherent meanings or intrinsic stimuli control human behavior. Blumer has held that human actors do not merely respond to surrounding stimuli but, rather, forge and direct their respective lines of action. "The position of symbolic interactionism is that the social action of the actor is

constructed by him" (1969:23). The ontological assumption is clear: *human actors impose meaning and order upon their own and others' activities*. Blumer sets this assumption aside, however, when describing and prescribing the investigation of human behavior. "For symbolic interactionism the nature of the empirical world is to be discovered, to be dug out by a direct, careful and probing examination of that world" (1969:48, our emphasis). Blumer never characterizes investigators as constructing the meaning or forging the order of the actions they investigate, nor does he instruct them to do so. The antithetical ontological assumption is clear: *human investigators reveal the meaning and order in the actions of others* by merely lifting the obscuring veils.

Blumer applies one set of ontological assumptions to the phenomena under investigation and another to the investigation of those phenomena. The paradox is that Blumer's methodological perspective abandons one of the basic premises of the theoretical perspective it was designed to investigate. If meaning and order are constructed and assigned, naturalistic inquiry is antithetical to social behaviorism and to symbolic interactionism as well.

Review and Implications

Mead rejects realism and idealism and consistently assumes a pragmatist position: reality is presumed, but science orders observed events through convergent responses which establish objective facts for science and shared meaning in other arenas of human conduct. It is upon these assumptions that Mead's methodological perspective and his social behaviorist theoretical perspective are constructed.

Blumer vacillates between idealism and realism. The pragmatist stance he claims bears no resemblance to Mead's position. Moreover, Blumer's naturalistic methodology is inconsistent with a basic premise of Blumer's symbolic interactionist theory. The order Blumer's methodology seeks to discover in the world flatly contradicts his theoretical claim that human actors impose order on that world. Blumer (1969:60) may have organized his epistemological stance to reflect what he as-

¹⁶ Some contemporary social psychologists, like Mead a half-century earlier, recognize that "laws and theories are not physical things which lie hidden beneath the bushes waiting for us to serendipitously trip over them. . . . They are man-made abstractions . . ." (Schlenker, 1973:12). Similarly, Zajonc (1972:2) observes that "order is not a feature of the universe and of nature but of the scientist's conceptions of the universe and of nature."

sumes to be the nature of the empirical world, but neither his assumptions nor his stance bear remote resemblance to those of the putative forefather of symbolic interactionism, George Herbert Mead.

A wide range of students of human behavior continue to pay homage to Mead's seminal theoretical ideas. But they also typically despair the systematic empirical investigation of those ideas. We attribute that despair to the confusion of Mead's ideas with the theory and methodology of symbolic interactionism. For example, Shaver (1974) writes that

. . . G. H. Mead is mentioned with reverence by several [contemporary European social psychologists] but no improvements in the methods of . . . symbolic interactionists are proposed. Mead's ideas have always been attractive but have yet to inspire novel methods or empirical findings.

It is true that Blumer studied with Mead and has assumed the role of sociological interpreter for Mead's ideas. But our review suggests that Blumer's symbolic interactionist methodology is, at best, an improvident vehicle for the systematic investigation of Mead's social behaviorist ideas and may, in fact, have thwarted such an investigation. Alternatively, Mead's ideas can be investigated in terms of his own methodological perspective.

INVESTIGATING MEAD'S IDEAS ON HIS OWN TERMS

How do two or more persons get their acts together in concert? (Mead, 1936:360-85). Mead (1936:377) put forth as "the principle of organization" the use of a gesture by the individual which calls out the same response in the user as it calls out in the other(s) to whom it is addressed. Such a response may be common to "the generalized other" within the language community of which the individual and others are a part. Convergent responses coestablish objects and codirect additional behavior toward, away from, and with respect to those objects (1936:378). Mead ([1927] 1964:312) used the term *significant symbols* to refer to the vocal or nonvocal gestures which elicit such common responses. The common responses themselves—that is, responding

to a gesture as another responds—Mead called "taking the attitude of the other" ([1912] 1964:140; [1913] 1964:145-6; [1922] 1964:243; [1924-25] 1964:380-1; [1927] 1964:312). The individual may respond to his or her own gesture as other responds or may respond to other's gesture as other responds.

"Taking the attitude of the other" is an article of faith long proclaimed by social behaviorists and symbolic interactionists. It has only recently been submitted to empirical examination. It is comparatively easy to observe and judge whether one person's ongoing behavior is altered corresponding to the vocal or nonvocal directions given by another.¹⁷ It is more difficult to observe the reflexive responses of an individual to his or her own directions. It is much more difficult to investigate reflexive responses when the vocal directions are covert. Three investigations have addressed these problems.

The nonvocal gesture of a mother extending a spoon of food toward an infant's mouth is frequently accompanied or followed by the mother opening her own mouth.¹⁸ In Mead's terms this constitutes "taking the attitude of the other" toward one's own nonvocal gesture. O'Toole and Dubin (1968) systematically observed 26 mothers spoon feeding their infants. They recorded 1,013 feeding acts (\bar{x} = 39 per feeding session), the direction of the baby's gaze orientation at the beginning of each act, and, whether the mother opened her mouth before or after the baby's mouth opened. Two of the mothers never opened their mouths at all and no mother opened her mouth on every feeding act. But mothers were observed to open their mouths in 59% of all their feeding acts.¹⁹

¹⁷ The exemplary research, consistent with Mead's theoretical and methodological perspective, is Rigney's (1972) behavioral examination of compliance.

¹⁸ This is not limited to the interaction of mothers and infants. Adult male and female nurses are observed to engage in the same reflexive responses when spoon feeding patients of all ages and sexes.

¹⁹ Four opened in 75-99%; thirteen in 50-74%; five in 25-49%; and two in 1-24% of all their feeding acts. Mothers were four times more likely to open their mouths following the baby's mouth opening whether or not the baby was looking in the direction of mother.

The majority engaged in reflexive responses to their own nonvocal gestures.

Vocal gestures are hypothesized (Mead, [1922] 1964:244-5) to have the same effect: "In giving directions, we give the direction to ourselves at the same time that we give it to another. We assume also his attitude [gesture] of response to our request" Smith (1971) coded videotape records of the vocal and manual gestures of 42 subjects as they gave overt vocal directions to another person (an accomplice of the experimenter). Subjects differed other to assume a sequence of six different hand positions (e.g., upturned, open palms; interlaced fingers). Smith judged that subjects engaged in manual gestures corresponding to their vocal directions to other from 41% (upturned, open palms) to 81% of the time (interlaced fingers) across the six different hand positions. The majority (\bar{x} = 60%) of persons engaged in reflexive responses corresponding to their own vocal gestures to other.

We do not readily and easily observe all human beings engaging in reflexive responses to their own vocal and nonvocal gestures. Such responses may be truncated or even covert. O'Toole and Dubin (1968) and Smith (1971) comment that additional reflexive responses might have been recorded with more sensitive measures of muscle tension. A colleague of Mead at the University of Chicago, Edmund Jacobson (1931), succeeded in producing electromyographic measurements of Ss' muscle movements corresponding to the actions they were asked to imagine performing (cf. Jacobson, 1973).

Mead's theoretical perspective suggests that when an individual observes or imagines another's performance of some behavior, the individual provides a running description of that behavior to him or herself. Such a description should call forth a rudimentary response similar to the behavior under observation or imagination. O'Toole and Dubin (1968) told Ss to observe carefully a series of situations so they could later describe them as accurately as possible. The S stood facing in the direction of an actor standing at the opposite end of the room. The actor leaned forward in the direction of an ob-

ject centered out-of-reach on a large square table. The leaning movement was repeated from all four sides of the table. Ss' lateral, rearward and forward body sway was measured. The Meadian hypothesis predicts forward sway by Ss regardless of the table location of the actor. O'Toole and Dubin report an average of 55% of the subjects did sway forward in all four of the actor's table locations. Mead's hypothesis is supported.²⁰

Leonard S. Cottrell, a student in Mead's 1930 Advanced Social Psychology course, examined a similar phenomenon with more sensitive measures of covert reflexive response. Cottrell (1971) directed Ss to observe and judge two activities performed by an experimenter. S and E were seated and facing across a small table with bared forearms resting on the table. S was told that E would squeeze a manometer bulb (with his right hand) with varying degrees of pressure and that S should observe each of 15 such squeeze trials, make a judgment by pressing a tension key with his own left forefinger to indicate hard, medium or light pressure.²¹ In the second part of the experiment S was asked to observe, to make and report judgments of "how hard" E clenched his jaw on 15 trials. For misdirection, Ss were told the experiment concerned electrical charges in the frontal area of the brain during observation and judgment tasks. Thus, an electrode was placed on the S's forehead along with "ground" electrodes in the right arm and cheek. In fact, the former electrode was the ground and the latter electrodes measured tension in the arm (flexor carpi radialis) muscle during hand grasping, and in the cheek (masseter) muscle during jaw clenching. Electrodes and tension key were fed to a Grass Electroencephalograph machine located in a separate room. This produced an elec-

²⁰ Average backward sway was \bar{x} = 18%; to the right, \bar{x} = 5%; to the left, \bar{x} = 2%; and, no sway averaged 20% across the four positions.

²¹ E held the bulb in his left hand, S pressed the key with his right forefinger, and the "ground" electrode was placed on S's left arm in the four cases where Ss were left handed. All Ss' tension key presses were calibrated prior to the first trial by having them practice giving what they considered several hard, medium and light presses.

tromyographic record of base level muscle tension prior to the beginning of the trials, and of increases and decreases in muscle tension level across trials.

Cottrell reports that 40 Ss' arm muscle tension levels significantly exceeded their base tension levels during the interval E was observed to squeeze the manometer bulb, but decreased significantly during the period following E's release of the bulb. Correspondingly, he reports that 40 Ss' masseter muscle tension levels significantly exceeded their base tension levels during the interval E was observed to clench his jaw but decreased significantly during the period following E's unclenching of his jaw (all differences, $p < .001$). The Meadian hypothesis receives further support.²²

These investigations of Mead's idea—"taking the attitude of other"—have been carried out by sociologists in a manner consistent with Mead's methodological perspective. The common denominator is an attempt to approach Mead's ideas behaviorally. Many symbolic interactionists have failed to recognize that Mead rejected Watson's behaviorism because of the limits which Watson, *not* Mead (1934:10), placed on such an approach.

... [I]t is not possible to deny the existence of mind or consciousness or mental phenomena, nor is it desirable to do so; but it is possible to account for them or deal with them in behavioristic terms which are precisely similar to those which Watson employs in dealing with nonmental phenomena.

Thus Mead set forth a social behavioral approach to society, self and mind which lends itself to investigations such as those summarized above.²³ Mead's perspective

is not limited, however, to experimental examination. His social behaviorist perspective can provide guiding theoretical and methodological assumptions for exploratory and descriptive research.

SOME ALTERNATIVES TO NATURALISTIC METHODOLOGY

Not every problematic behavior, nor every phase of any problematic behavior, lends itself to experimental investigation. Some behaviors are problematic not because they are exceptions to existing knowledge but, rather, because so little relevant knowledge exists. There is no substitution here for direct observation of the problematic behaviors. In the absence of explicit theoretical guidelines and substantive knowledge, an investigator may wish to explore, observe and describe some theretofore poorly understood behaviors (cf. Mead, 1936:283-5). Blumer must be commended for tenaciously reminding us there is no substitution for direct observation of behavior. But this may be accomplished in a manner which avoids many of the problems we have noted with naturalistic methodology. Mead's theoretical and methodological perspective suggests we abandon any concern with discovering the true nature or imminent meaning of any behavior; that we restrict the scope of behavior we attempt to observe and describe; and, that we establish some control over our own observing and recording behavior. We discuss each of these points and Melbin's (1972) exploratory-descriptive study of interpersonal behavior as a limited example.

Domains of Meaning

If the meanings of any object, event or activity are the responses made to it, no form of inquiry can fathom the "natural"

²² Important experiments which remain to be conducted include those which check for the extent of correspondence of other's response with the individual's reflexive response, which investigate the necessity and implication of such correspondence in a sequence of alternating and simultaneous coordinated actions, and, which examine the platform which "taking the attitude of the other" provides for imitation behaviors (cf. Lewis, 1979).

²³ We do not suggest that Mead's ideas are restricted to examination by psychophysiological experiments. We do suggest those ideas are complemented and extended by recent advances in neuro- and psychophysiological research on subvocal speech (Locke, 1970), on problem solving

(McGuigan, 1978; McGuigan and Schoonover, 1973), and on consciousness (John, 1976). Those theoretical and empirical advances may require radical alterations in the models of individual behavior which sociologists previously have assumed in their examination of interpersonal, group and social system phenomena. For one such alternative model which is generally consistent with Mead's approach, see Powers, 1973a; 1973b; 1978.

meaning, understanding or lawfulness of a phenomenon. Convergent responses may establish shared meaning, common understanding, and socially constructed lawfulness of any phenomenon. The observer and observed are likely to make similar responses to the latter's behavior to the extent they are operating with the same language and/or similar instructions for response. When they are not, the observer's responses to the behavior, and the explicit or implicit theoretical instructions occasioning the responses, constitute one domain of meaning for the behavior. The responses of the observed, and the occasioning instructions, constitute another domain of meaning. The investigating observer may wish to ascertain observed persons' responses to their own behavior, and the occasioning instructions, and may even wish to compare this domain of meaning with the observer's own responses. But neither domain is any more natural or less artificial than the other. One or the other, or both, may be more useful depending on the purposes at hand.

Scope and Control

The basic differences between experimental or systematic observation and exploratory-descriptive studies are not those of natural vs. artificial sites, phenomena or procedures. The differences turn on the scope of behavior one attempts to observe, the control one has over the behavior to be observed, and, the control one has over the observation of the behavior.

The experimenter has identified some specific behavior for observation, can locate or construct a situation in which the behavior can be produced or manipulated in accordance with the experimenter's theoretical directions, and, can control the observation and recording of his or her own behavior in relation to the behavior under investigation.

The alleged scope of naturalistic inquiry has always been very wide. But everything cannot be questioned at once (cf. Mead [1917] 1964:200) without eliminating some stable vantage point from which to

pursue investigation of that which is questioned. And everything cannot be observed at once! The human observer is a very limited instrument (Miller, 1956). The more persons to be observed, the greater the number of behaviors in which they engage and the greater the rate at which those behaviors occur, the less reliable the observer's record. If the investigator cannot control the behavior under observation, there must be a reduction in the scope of behaviors and actors to be observed.

The investigator's control over his or her own behaviors involves, at minimum, recording what she or he has done—where, when and how—to make and record the exploratory observations. "How did you know the behavior when you saw it?" This provides a basis for standardizing what the investigator does on successive occasions of observation or, equally important, knowing the baseline from which necessary changes or adjustments of criteria and procedure may be made. These same criteria and procedures constitute the directions by which others may do what the original investigator reports, may repeat those observations, and may confirm, revise or deny the original report. Melbin's (1972) research illustrates some of the advantages of a restricted scope of inquiry, and, of maintaining control over the investigator's responses to the behavior(s) of interest throughout the exploration, description and analysis of interpersonal behavior.

Melbin (1972:9) adopted a Meadian behaviorist stance by rejecting any concern with behavioral arousal, by assuming that living persons are always behaving, and by attempting to observe and describe their behavior and how it is directed in some ways rather than others. He began with the assumption that interpersonal acts commence with the behavior of one or more persons in a situation of sensory access to one or more other persons, and that acts continue or are completed with a variety of alternative reactions by one or more of those other persons. He therefore sought to describe systematically the situations established by the behaviors of one category of persons (psychiatric patients) and the probable alternative reactions of a

second category of persons (psychiatric aides).

Melbin conceded the absence of explicit a priori criteria for identifying beginnings, middles and endings of interpersonal acts. He could not identify the population and take a sample of such acts. Instead, he identified the population of sites of contact opportunities between patients and aides common to one state (3,000 bed) and one private (200 bed) hospital. He divided the waking hours of 7 A.M. to 11 P.M. throughout the week into two-hour periods. From this time-site matrix Melbin drew a sample of 54 observation periods (108 hours), yielding at least two periods per site per hospital. The sampled time-sites were visited and observations were recorded across a two-year span.

Four observers, including Melbin, were trained in criteria and procedures (1972:100-4) for recording surroundings, circumstances, participants' sex and approximate age, physical objects employed, and what was said and done. They attempted to "make exhaustive records in everyday English" whenever a patient's behavior, presence, or circumstance was followed by an aide's reaction. Observers were instructed (1972:103) to finish recording any sequence they had begun before turning to observe and record other developing episodes which might be more dramatic, and, to err on the side of "fuller pictures rather than sketchy" ones. Such observation and recording is demanding and exhausting, even with the restricted focus Melbin prescribed.²⁴ He concedes (1972:104) "it was a practical impossibility for an observer to note and enumerate all . . . the myriad aspects . . . [of all] . . . contacts between aides and patients." Nonetheless, this is one of the most systematic exploratory-descriptive field studies reported in the literature. With few exceptions, Melbin's criteria and procedures are exemplary and, with a sample of his findings, merit brief comment.

Six hundred seventy-eight sequences

were recorded in the two hospitals. These observations were weighted to adjust the actual hours of observation to the aides' 40-hour work week, for the relative number of aides present during an observation period, and, for the time of observation during the work shift of the day. Melbin estimates the weighted total number of act sequences to be 537 (private = 257; state = 280) for the two samples.

Melbin did not perform interobserver reliability checks during the field observations nor intercoder reliability checks during the classification of the observation data.²⁵ He does report the guidelines in terms of which observers were trained and observations were made. He also provides detailed criteria and procedures (1972:105-39) for classifying those observation reports into 26 categories of situations and 24 categories of simple reactions (1972:105-39).

Melbin's classification scheme orders 98% of his 537 observation records of patient-aide interaction. He reports the frequency [(S)] and probability [p(S)] of each of the 26 situations; the frequency [(R)] and conditional probability [p (R)] of simple and compound reactions to each of the situations; and the conditional probability of all pairs of situations and reactions [p (S) p (R)]. For example, the most frequently occurring situation (S) in the private hospital was a patient requesting

²⁴ Observers were trained to record only the behavior of aides in the presence of patients, and what the patients were doing at the time (Melbin, 1972:102). In the absence of aides, patient behavior was not recorded at all (Melbin, 1972:100).

²⁵ Given the random assignment of single observers to the different time-site locations, the former omission is less disturbing than the latter. It is not clear, however, why Melbin performed no check on the intercoder reliability of his classification system on at least a sample of the data. He did perform an interesting comparison of subjects' responses to his classification of observers' records of situations. Representative incidents of 25 of the categories of patient situations were typed on cards and presented to a sample of aides from the two hospitals. If they had seen such a situation they were asked to describe what the aide had done the last time the situation occurred. If, and only if, the reaction reported by the aide also had been reported by an observer, Melbin compared the two reports and used the language of the aide to mark the end-boundary of aide reactions to patient situations. Eighty-two percent of the reaction categories were established by such observer-aide correspondence. And, these categories subsumed 85% of the reactions recorded by the observers. Melbin offers this as evidence of the reliability of the estimated frequency of aide reactions in the population.

an item, service or information. The probability of this situation occurring was $p(S) = .118$.²⁶ The most frequent aide reaction (R) to this situation was fulfilling the request. The conditional probability of this reaction occurring to this situation was $p(R) = .810$.²⁷ The probability of this particular situation-reaction occurring among all pairs of situations-reactions was $p(S)p(R) = .096$.²⁸ Similar behavior descriptions are provided for simple and compounded aide reactions to the 26 categories of patient situations in the two hospitals. Melbin's (1972:154-86) rich data tables nicely illustrate some of the advantages of systematically observing, describing and becoming familiar with the phenomena we claim to study before proceeding to explain or predict those phenomena, or to produce them in conditions under our control.²⁹

Melbin sought to explore, observe and describe a poorly understood phenomenon: interpersonal behavior. He assumes the Meadian theoretical stance that the meaning of behavior is the response made to it (1972:68-85; 189-211), and he restricted the scope of inquiry to the description of aides' responses to patients' behaviors (1972:100, 102). Melbin emphasized controlled perception by instructing observers where (1972:94-6), when (1972:96-8), who (1972:99) and what (1972:103) to observe, and how (1972:103) to record those observations. He exercised further control by providing a detailed record (1972:105-39) of the devel-

opment and use of coding criteria for classifying the observation records into the categories used in his imaginative statistical analysis. He fails to provide interobserver and intercoder corroborative evidence, but he documents the steps by which observation and coding were accomplished, and by which, in principle, corroboration could be undertaken. Melbin's study is therefore an important advance in the development of rigorous exploratory-descriptive research, and a promising alternative to naturalistic methodology.

SUMMARY

We have challenged the long-standing assumption that Blumer's symbolic interactionist methodology is an extension and explication of "the Meadian tradition." Mead's characterization and analysis of scientific inquiry are strikingly different from Blumer's naturalistic methodology. We have attributed these epistemological differences to their diverse ontological assumptions. We have argued that Blumer's ontological assumptions contradict a basic premise of his symbolic interactionist theory. His naturalistic inquiry neither compliments nor extends Mead's methodological perspective.

We have challenged the related assumption that Mead's theoretical ideas are not amenable to systematic empirical examination. This assumption has arisen from a confusion of Blumer's symbolic interactionism with Mead's social behaviorism. Blumer's methodology does not lend itself to the investigation of Mead's ideas but those ideas have been investigated in a manner consistent with Mead's own methodological perspective. We have summarized several experimental investigations of Mead's notion "taking the attitude of other," one of them conducted by Mead's former student, Leonard S. Cottrell.

Finally, we have discussed several implications of Mead's methodological perspective for redressing some of the problems of naturalistic inquiry and have offered illustrations from Melbin's exploratory-descriptive study of interpersonal behavior. This research, like the ex-

²⁶ $p(S) = .118 = [(n = 30.15) \div (N = 256.57)]$; or, the number of times this situation occurred divided by the total N of situations which occurred in the hospital.

²⁷ $p(R) = .810 = [(f = 24.42) \div (n = 30.15)]$; or, the frequency of this specific reaction in this situation divided by the number of times this situation occurred in the hospital. Other reactions to this situation, and their probabilities, were: *refuses*, $p(R) = .136$; *teaches or corrects and then fulfills*, $p(R) = .017$; *teaches or corrects and then refuses*, $p(R) = .020$; and, *banters*, $p(R) = .017$.

²⁸ $p(S)p(R) = .096 = \{[p(S) = .118] \{p(R) = .810\}\}$; or, the product of the probability of this specific situation times the probability of this specific reaction in this specific situation.

²⁹ Such data also make possible Melbin's (1969) analysis demonstrating temporal and structural variations across the two hospitals in patients' unusual and routine disturbed behaviors.

perimental studies of "taking the attitude of other," has given attention to the behavior of the subjects and to the behavior of the investigator as well. Both foci are central to an understanding and investigation of Mead's theoretical and methodological perspective.

REFERENCES

- Bales, Robert F.
1966 "Comment on Herbert Blumer's paper." *American Journal of Sociology* 71:545-7.
- Blumer, Herbert
1928 *Method in Social Psychology*. Ph.D. dissertation, Department of Sociology, University of Chicago.
[1931] "Science without concepts." *American Journal of Sociology* 36:515-33. Pp. 153-70 in Blumer (1969).
1936 "Social attitudes and non-symbolic interaction." *Journal of Educational Sociology* 9:515-23.
1937 "Social psychology." Pp. 144-98 in Emerson P. Schmidt (ed.), *Man and Society*. New York: Prentice-Hall.
[1940] "The problem of the concept in social psychology." *American Journal of Sociology* 45:707-19. Pp. 171-82 in Blumer (1969).
[1954] "What is wrong with social theory." 1969 *American Sociological Review* 19:3-10. Pp. 140-52 in Blumer (1969).
1966 "Sociological implications of the thought of George Herbert Mead." *American Journal of Sociology* 71:535-44.
1969 *Symbolic Interactionism: Perspective and Method*. Englewood Cliffs: Prentice-Hall.
1973 "A note on symbolic interactionism." *American Sociological Review* 38:797-8.
1977 "Comment on Lewis's 'The classic American pragmatists as forerunners to symbolic interactionism'." *Sociological Quarterly* 18:285-9.
- Cottrell, Leonard S., Jr.
1971 "Covert behavior in interpersonal interaction." *Proceedings of the American Philosophical Society* 115:462-9.
- Huber, Joan
1973a "Symbolic interaction as a pragmatic perspective: the bias of emergent theory." *American Sociological Review* 38:274-84.
1973b "Reply to Blumer: but who will scrutinize the scrutinizers?" *American Sociological Review* 39:798-800.
- Jacobson, Edmund
1931 "Electrical measurements of neuromuscular states during mental activities." *American Journal of Physiology* 97:200-9.
1973 "Electrophysiology of mental activities and introduction to the psychological process of thinking." Pp. 3-24 in J. McGuigan and R. A. Schoonover (eds.), *The Psychophysiology of Thinking*. New York: Academic.
- John, E. Roy
1976 "A model of consciousness." Pp. 1-50 in Gary E. Schwartz and David Shapiro (eds.), *Self Regulation: Advances in Research*. Vol. 1. New York: Plenum.
- Kuhn, Thomas
1962 *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Lewis, J. David
1976 "The classic American pragmatists as forerunners to symbolic interactionism." *Sociological Quarterly* 17:347-59.
1977 "Reply to Blumer." *Sociological Quarterly* 18:291-2.
1979 "A social behaviorist interpretation of the Meadian 'I'." *American Journal of Sociology* 85. In press.
- Lewis, J. David and Richard L. Smith
1980 *American Sociology and Pragmatism: Mead, Chicago Sociology and Symbolic Interaction*. Chicago: University of Chicago Press. In press.
- Locke, John L.
1970 "Subvocal speech and speech." *Asha* 12:8-14.
- Lundberg, George
1954 "Methodological convergence of Mead, Lundberg and Parsons." (Comment on McKinney, 1954.) *American Journal of Sociology* 60:182-4.
- McGuigan, J.
1978 *Cognitive Psychophysiology: Principles of Covert Behavior*. Englewood Cliffs: Prentice-Hall.
- McGuigan, J. and R. A. Schoonover
1973 *The Psychophysiology of Thinking*. New York: Academic Press.
- McKinney, John C.
1954 "Methodological convergence of Mead, Lundberg, and Parsons." *American Journal of Sociology* 59:565-74.
1955 "George H. Mead and the philosophy of science." *Philosophy of Science* 22:264-71.
- Manis, Jerome G. and Bernard N. Meltzer (eds.)
1972 *Symbolic Interaction: A Reader in Social Psychology*. Boston: Allyn and Bacon.
- Mead, George H.
1894 "Herr Lasswitz on energy and epistemology." *Psychological Review* 1:172-5.
[1900] "Suggestions toward a theory of the philosophical disciplines." *The Philosophical Review* 9:1-17. Pp. 6-24 in Mead (1964).
[1903] "Definition of the psychical." *The Decennial Publications of the University of Chicago*. Chicago: University of Chicago Press. Pp. 25-59 in Mead (1964).
[1906] "The teaching of science in college." *Science* 24:390-7. Pp. 60-72 in Mead (1964).
[1912] "The mechanism of social consciousness." 1964 *Journal of Philosophy, Psychology and Scientific Method* 9:401-6. Pp. 134-41 in Mead (1964).
[1913] "The social self." *Journal of Philosophy, Psychology and Scientific Method* 10:374-80. Pp. 142-9 in Mead (1964).

- [1917] "Scientific method and individual thinker." 1964 Pp. 176-227 in John Dewey (ed.), *Creative Intelligence: Essays in the Pragmatic Attitude*. New York: Holt. Pp. 171-211 in Mead (1964).
- [1922] "A behavioristic account of the significant symbol." *Journal of Philosophy* 19:157-63. 1964 Pp. 240-7 in Mead (1964).
- [1923] "Scientific method and the moral sciences." *International Journal of Ethics* 33:229-47. Pp. 248-66 in Mead (1964).
- [1924-1925] "The genesis of the self and social control." *International Journal of Ethics* 33:275-93. Pp. 267-93 in Mead (1964).
- [1927] "The objective reality of perspectives." 1964 Pp. 75-85 in E. S. Brightman (ed.), *Proceedings of the Sixth International Congress of Philosophy*. New York: Longmans, Green. Pp. 306-19 in Mead (1964).
- 1932 *Philosophy of the Present*. Ed. by Arthur Murphy. LaSalle: Open Court.
- 1934 *Mind, Self and Society*. Ed. by Charles Morris. Chicago: University of Chicago Press.
- 1936 *Movements of Thought in the Nineteenth Century*. Ed. by Merritt H. Moore. Chicago: University of Chicago Press.
- 1938a *The Philosophy of the Act*. Ed. by Charles W. Morris. Chicago: University of Chicago Press.
- 1938b "Logical analysis of the experimental method." Pp. 82-3 in Mead (1938a).
- 1964 *Selected Writings*. Ed. by Andrew Reck. Indianapolis: Bobbs-Merrill.
- Melbin, Murray
1969 "Behavior rhythms in mental hospitals." *American Journal of Sociology* 74:650-65.
1972 *Alone and With Others: A Grammar of Interpersonal Behavior*. New York: Harper and Row.
- Meltzer, Bernard N.
[1964] "The social psychology of George Herbert Mead." Pp. 4-22 in Jerome G. Manis and Bernard N. Meltzer (eds.), *Symbolic Interaction: A Reader in Social Psychology*. Boston: Allyn and Bacon.
- Miller, George
1956 "The magic number seven, plus or minus two: some limits on our capacity for processing information." *Psychological Review* 63:81-97.
- O'Toole, Richard and Robert Dubin
1968 "Baby feeding and body sway: an experiment in George Herbert Mead's 'Taking the role of the other'." *Journal of Personality and Social Psychology* 10:59-65.
- Powers, William T.
1973a "Feedback: beyond behaviorism." *Science* 179:351-5.
1973b *Behavior: The Control of Perception*. Chicago: Aldine.
1978 "Quantitative analysis of purposive systems." *Psychological Review* 85:417-35.
- Rigney, Ernest G.
1972 *A Behavioral Examination of Compliance*. M. A. thesis, Department of Sociology, University of South Carolina, Columbia.
- Schlenker, Barry R.
1973 "Social psychology and science." *Journal of Personality and Social Psychology* 29:1-13.
- Shaver, Phillip
1974 "Review" of Joachim Israel and Henri Tajfel (eds.), *The Context of Social Psychology: A Critical Assessment*. New York: Academic Press. *Contemporary Psychology* 19:356-8.
- Smith, Richard L.
1971 *Reflexive Behavior: An Experimental Examination of George Herbert Mead's Treatment of Vocal Gestures*. M.A. thesis, Department of Sociology, University of South Carolina, Columbia.
- Spreitzer, Elmer, and Larry T. Reynolds
1973 "Patterning in citations: an analysis of references to George Herbert Mead." *Sociological Focus* 6:71-82.
- Stewart, Robert L.
1975 "What George Mead should have said: exploration of a problem of interpretation." Paper presented at the annual meeting of the North Central Sociological Society, Columbus.
- Stone, Gregory P., David R. Maines, Harvey A. Farberman, Gladys I. Stone, and Norman K. Denzin
1974 "On methodology and craftsmanship in the criticism of sociological perspectives." *American Sociological Review* 39:456-63.
- Stryker, Sheldon
1977 "Developments in 'Two Social Psychologies': toward an appreciation of mutual relevance." *Sociometry* 40:145-60.
- Tucker, Charles W.
1969 "The epistemological assumptions of social behaviorism and symbolic interactionism." Paper presented at the annual meeting of the American Sociological Association, San Francisco.
- Zajonc, Robert B.
1972 *Animal Social Behavior*. Morristown: General Learning Press.

INCOME INEQUALITY IN THE FEDERAL CIVILIAN GOVERNMENT*

PATRICIA A. TAYLOR

Sweet Briar College; University of Virginia

American Sociological Review 1979, Vol. 44 (June):468-479

An analysis of income inequality by race and sex within the federal civil service yields three findings of importance for income attainment and human capital research. First, large differences in salary between minority/sex groups remain after occupational stream and a number of employment-related variables are controlled. Second, institutionalized discrimination explains only one-half of these salary differences. Finally, within the federal civil service, the pay structures of minority and nonminority women are more similar to each other than are the pay structures of any other two groups of employees.

The federal civil service, this nation's largest employer, has maintained by law a merit system of employment since the passage of the Civil Service Act in 1883. The initial impact of this legislation was to remove 10% of government jobs from political patronage and to establish a civil service in which employees were to be hired and promoted on the basis of job-related qualifications and merit. As of 1977, approximately 93% of all federal civilian employees were subject to merit regulations. A large body of executive orders and public laws now require that personnel actions in the federal civil service be free from discrimination on the basis of race, religion, national origin (Executive Order 8587, 1940; Executive Order 11478, 1969; and Public Law 92-261, 1972), sex (Executive Order 11478, 1969; and Public Law 92-261, 1972), and age (Public Law 93-259, 1974).

Given this long history of regulations

prohibiting employment discrimination, as well as the role of the federal government as a model employer (Mosher, 1965: 170-1), we would expect that the federal civil service would show less income inequality between minority/sex groups than the private sector, and some limited research tends to support this expectation (Smith, 1976). Moreover, as the federal bureaucracy is the instrumental organ for the implementation of federal laws and regulations, it is more sensitive to both congressional scrutiny and public criticism than the private sector, and thus more likely to enforce nondiscrimination laws. Finally, a number of federal services such as the biennial census, income tax collection, interstate commerce regulation, etc., are provided by no other organizations. Therefore, agencies of the federal government cannot argue that discriminatory clientele would go elsewhere if the agencies should hire and advance minorities and women. Thus, equal employment opportunity should be implemented in the federal civil service, if anywhere.

This paper examines data on the federal civil service to address three questions of major importance in studies of income inequality: (1) within one employment context, how much income inequality by race and sex exists; (2) what amount of income inequality might be attributed to employer discrimination; and (3) how much income inequality by race and sex remains after placement into job streams is controlled?

* Address all communications to: Patricia A. Taylor; Department of Sociology; University of Virginia; Charlottesville, VA 22903.

The author wishes to acknowledge the helpful criticisms of two anonymous reviewers at the *ASR*; the comments of Nathan Kantrowitz, Murray Milner, Robert Stump, and Paul Wilken; the programming assistance of Dale Child and Paul Twohig; and the preparation of the manuscript by Gail Wooten Votaw. Part of this research was conducted under NIE-G-78-0005, a research grant from the Department of Health, Education, and Welfare. The findings and opinions expressed are those of the author and should not be construed as representing the opinions or policies of any reviewer, or any agency of the federal government.

Income Inequality in Employment

Numerous studies in human capital analysis and in the status attainment literature have pointed to the importance of education, years of work experience, and other labor market variables as determinants of income attainment (Becker, 1957; Becker and Chiswick, 1966; Duncan, 1969; Mincer, 1970; Kluegel, 1978; Oaxaca, 1973; and Smith, 1976). Generally, three underlying themes have emerged from studies of income inequality.

First, there is an assumption that different rewards given to different race, sex, or ethnic groups for equal amounts of education, experience, etc., may be *prima facie* evidence of the failure to apply the principle of achievement in a universal manner. Adherence to the principle of achievement rather than ascription requires that workers be evaluated on the basis of their productivity rather than on the basis of race, sex, or other ascribed characteristics. Hence, human capital analysis as formulated by Schultz (1961) and Becker (1964) has received widespread attention not only because of its theoretical and methodological parallel to analyses of physical capital, but also because of its intuitive appeal to an egalitarian argument in studies of income inequality. A growing body of research in this area has found, for example, that blacks receive a lower return to education than do whites (Becker, 1966; Weiss, 1970; Harrison, 1972; Jencks, 1972; Welch, 1973; and Kluegel, 1978); that women receive a lower return to education than do men (Malkiel and Malkiel, 1973; Oaxaca, 1973); that, net of education and other job-related variables women and blacks receive lower salaries than do men and whites (Suter and Miller, 1973; Smith, 1976); and that the quality of schooling may not account for much of the difference in returns to education (Weiss, 1970).

The issue of achievement versus ascription has undergone increasing scrutiny by a number of researchers (cf. Butler, 1976), especially when the concept of structural and/or institutional discrimination is invoked to explain income inequality. Explanations of inequalities among groups

often make use of the concept of institutional discrimination, as distinct from individual racism, sexism, or the like (see Benokraitis and Feagin, 1974; Yetman and Steele, 1971, for reviews). A common feature of such explanations is the argument that inequality is, to a considerable extent, a result of the equal application of universalistic criteria to groups that meet these criteria unequally (Jones, 1972; Yetman and Steele, 1971; 363-7). Black students denied admission to college because of low scores on standardized tests, women earning lower salaries than men because they have less on-the-job experience, and Hispanics who are passed over for employment or promotion because they lack the educational requirements of the position—all these might be viewed as instances of institutional discrimination through the use of merit standards universally applied.

Recently, Butler (1976) has criticized this view of inequality, while suggesting that the universalistic criteria of educational level and aptitude test score do not account for the observed differences in promotion time between black and white enlisted men in the U.S. Army. He concludes that "the black enlisted man is subject to inequality which is not the result of failure to meet universalistic criteria, i.e., indirect impersonal institutions, but rather a result of the direct racist actions of real life people" (Butler, 1976:817). The continuing discussion of black-white and male-female differences in the socioeconomic achievement literature attests to the importance of such an issue (cf. Hauser, 1978; Butler, 1978).

These studies have relevance for merit employment in a civil service system. For example, if education is used to assign level of work which in turn determines salary, then equal levels of education should produce equal salaries for each minority/sex group, *ceteris paribus*. In short, the economic returns to education, work experience, and other employment-related variables for various minority/sex groups may be compared to determine the extent to which a merit employer adheres to stated principles of equality of opportunity.

A second emergent theme of studies of income inequality is that the structure of labor markets may influence the avenues of mobility, monetary returns to education, and so forth (Bowles and Gintis, 1976; Kaysen, 1973; Kluegel, 1978). Therefore, assessment of discrimination is difficult since differences between employers may mask important effects. For example, work experience within one firm may not be fully credited toward salary in another firm; years of schooling may be more important to one employer than another; and positions of authority may vary in the exercise of control. Unless specific attention is given to these differences, studies across various employers may be misleading.

Doeringer and Piore's (1971) concept of the internal labor market directs attention to just such issues (see also Caplow, 1954, on the bureaucratic labor market). In an internal labor market, employees and the employer are to some extent shielded from direct economic influences of the external labor market (whether national, regional, or local) by the stability of established personnel practices and worker/management relations. The internal labor market has clearly defined ports of entry, specifiable career ladders for advancement, and regulations governing entry and progression. In short, the ideal-type internal labor market is a rationalized economy in which personnel regulations are made explicit and are applied in a universal manner.

To the extent that an internal labor market can be identified, a number of confounding effects in studies of discrimination can be eliminated.

A third, but no less important theme of income inequality studies, is that job placement may be of critical importance in discerning possible discriminatory patterns. For example, the concentration of employees by race (or sex) into trade occupations which have especially protective unions may affect studies of income inequality (cf. Ashenfelter, 1972; Snyder and Hudis, 1976). Race differences in the general allocation of occupations may alter the relationship of salary, education, and occupational placement (Duncan, 1969). To the extent that career lines exist

within occupations or groups of occupations which have different earnings, an employee's salary is limited in no small measure by occupational placement (cf. Spilerman, 1977).

The mechanism by which minorities and women become concentrated in particular occupations is not well understood (Snyder and Hudis, 1976). However, within one internal labor market we would reason that the employer has considerable control over the placement of individuals into particular job streams. That is, the employer allocates applications for employment to specific hiring pools, such as job registers categorized by type of work and level of expertise. Once hired into a particular job stream, internal staffing regulations may "track" employees for the duration of their career with the employer. Such tracking may operate to segregate women into low-paid clerical occupations, for example, or minorities into technical occupations. Should such occupational placement occur, then some of the salary differences between minority/sex groups may be attributed to employer discrimination rather than institutional discrimination.

However, the separation of institutionalized discrimination (i.e., employee characteristics) from employer discrimination (i.e., job placement, supervising positions, etc.) is rarely made. Employment data within one internal labor market would provide the basis for such an analysis. Recent data on federal civilian employees made available by the U.S. Civil Service Commission allow for a study of possible minority/sex differences in salary within one labor market.

Data and Method of Analysis

A one-in-one hundred sample of the full-time white-collar federal civilian work force was drawn from the U.S. Civil Service Commission's automated data files. The salaries of active white-collar employees as of June 1977, were analyzed by regression analysis.

Approximately 70% of the 2.5 million federal civilian employees are included in the white-collar work force, the remaining

employees are in the wage grade. The personnel policies which affect these employees derive from a long history of congressional legislation, Executive Orders, and Civil Service Commission regulations which require: (a) equal pay for substantially equal work (Classification Act, 1949); (b) personnel actions free from discrimination; and (c) federal pay systems commensurate with private pay systems (Pay Comparability Act, 1970). These laws along with regulations issued by the Civil Service Commission through the *Federal Personnel Manual* generate in effect a single (albeit large and heterogeneous) internal labor market (cf. Doeringer and Piore, 1971). Although there may be different job streams and career lines, the standards for job classification by type of work, difficulty of work, etc., are set by law and Civil Service Commission policy, so that across occupations or career lines, jobs of equal levels of difficulty, responsibility and so forth should receive equal remuneration. Therefore, analysis of the white-collar workers in the civil service holds constant various influences which might otherwise confound a study of employment discrimination.

Salary in dollars is the dependent variable for this analysis. Additional variables which may affect the salary of an employee and/or the operations of the internal labor market are given below.

Education is measured by the number of years of schooling completed and varies from 4 years of schooling to 22 years for postdoctoral work. *Supervisory status* is used here as a dummy variable, with the value of 0 for a nonsupervisory position, and 1 for a supervisory position. *Age* is determined by year of birth and varies from 18 to 70. *Years of federal service* varies from 0 to 50 years of experience in the federal government. This variable also includes years of military service, and as such, would tend to bias upwardly the years of work experience for men as opposed to women, since men are far more likely to have spent time in the military. As both age and years of work experience are known to have a nonlinear relationship with earnings (Becker, 1964:7-8; Mincer, 1974), squared terms for both age and

years were used in this analysis as additional controls.

Three additional variables are of particular importance to the federal labor market. First, *Position* occupied is entered as a dummy variable and indicates whether the position currently held by an employee is in the competitive (1) or excepted (0) service. Excepted service positions are specified by laws and regulations, and although most excepted positions fall under some merit system, these regulations differ somewhat from those covering the Civil Service Commission's competitive service. Excepted service employment is noteworthy in that an incumbent earns no reinstatement eligibility and both appointment to and removal from office are easier in the excepted than in the competitive service. Veteran status is also included by the use of two dummy variables. *Disabled veterans* are those persons who have a compensable or service-related disability. *Other veterans* are those persons who served in the armed forces; who are the spouse or mother of a veteran with a service-connected disability; or who are the widow, widower, or mother of a deceased wartime veteran. Veteran status is important in the federal civilian service as those who qualify for a veterans' preference receive preferential consideration in hiring when competing from a civil service register and at times during reduction-in-force. To control for region, a dummy variable for location of employment (D.C.) is used to identify those who are employed in the District of Columbia and its surrounding area, or in the field. As the heads of federal agencies are located in D.C., as well as other highly graded staff positions, location in D.C. may be related to higher salaries.

Finally, four minority/sex groups have been identified by crossing sex with minority status. Those persons who are identified as Negro, Spanish-surnamed, Oriental, American Indian, Aleut, or Eskimo are classified as minority employees; any other employee is classified as non-minority.

There are four steps in this analysis. First, in order to assess the additive relationship of minority/sex groups to salary with job stream controlled, a regression

analysis is performed within five occupational groups of the white-collar work force—professional, administrative, technical, clerical, and other. Second, differences in pay structure across minority/sex groups are examined through regressions performed within minority/sex categories. Next, differences in predicted salary for the four minority/sex groups are obtained from the latter regression analyses by systematically varying the assumptions that might plausibly be made about pay structures and mean values. Finally, the decomposition of differences in salary due to different group characteristics and different pay structures is presented.

Results

The results of the first data analyses are presented in Table 1. For each occupational group, a regression analysis was performed using salary as the dependent variable. Ten independent variables were introduced to control for factors which might affect the relationship of minority/sex status and salary. After the independent variables were entered, dummy variables for nonminority females, minority males, and minority females were entered into the analysis. As nonminority male is the deleted category among the minority/sex groups, the unstandardized regression coefficient for each of the other minority/sex groups represents the salary differences between nonminority males and a specific minority/sex group.

As shown in Table 1, the explained

variance for the regression analyses ranges from $R^2 = .456$ for administrative to $R^2 = .793$ for clerical workers, for federal employees as of June 1977. These relatively large R^2 's suggest that most of the variation in salary has been statistically explained by the variables used here.

The total regression analysis includes all white-collar employees as specified earlier. With variables such as age, years of federal service, and education controlled (as well as a number of other employment-related variables), there exist considerable salary differences between nonminority males and other minority/sex groups. On the average, minority males earn \$1,994 less than nonminority males; nonminority females earn \$3,476 less; and minority females, \$3,970 less. When occupational groups are analysed, separately there are still notable differences as between minority females and nonminority males in the professional category where minority females earn \$5,172 less than nonminority males. Even though differences between the four groups diminish in the case of some occupational groups (as, for example, among clericals), no minority/sex group surpasses nonminority males in average salary.¹

¹ A significant obstacle to an analysis of inequality within one segment of a labor force is that (to paraphrase Hauser, 1978) there is no closure in the civil service population with respect to movement out of the Civil Service. That is, if termination of federal employment varies by minority/sex groups, especially if this outflow also varies by qualifications and/or ability, then estimates of inequality will be misstated.

Table 1. Cost of Discrimination among Federal Civil Servants, for Active Employees, 1977

Occupational Group for Active employees, 1977	N	R^2	Net Economic Detriment in Dollars ^a		
			Nonminority Females	Minority Males	Minority Females
Professional ^b	2,690	.557	-5,156	-831	-5,172
Administrative ^c	3,321	.456	-3,909	-1,519	-4,862
Technical ^c	2,924	.542	-1,587	-1,673	-2,320
Clerical ^c	6,705	.793	-396	-623	-695
Other ^d	272	.540	-480	-524	-1,107
Total ^c	15,912	.603	-3,476	-1,994	-3,970

^a Regression b's for each minority/sex group are net of age, square of age, position occupied, D.C. or field, supervisory status, disabled veteran, other veteran, years of federal service, square of years of federal service, and educational attainment.

^b All coefficients and the model are significant at the $p \leq .001$ level, except for minority males, $p \leq .112$.

^c All coefficients and the model are significant at the $p \leq .001$ level.

^d None of the minority/sex coefficients obtained statistical significance, although the model itself was significant at the $p \leq .001$ level.

Actually, the salary differences between nonminority males and other groups are likely to be larger than those presented in Table 1, since the different groups may have not only different mean values of education, work experience, and so forth, but also different pay structures, or rates of return. The regression equations in Table 1 represent the best-fitting *joint* pay structure, with only the additive effects of minority/sex group considered. In order to assess the pay structure of each minority/sex group separately, economic inequality will be analyzed using a method of indirect standardization discussed by Althausen and Wigler (1972), and variously employed by Duncan (1969), Smith (1976), and Kluegel (1978), among others. Basically, we are asking the following question: What part of the salary differences for active employees between nonminority males and other groups is due to the fact that each group has different levels of education, etc., and what part may be due to different pay structures? For example, the human capital model of returns to schooling would suggest that if nonminority males had higher levels of education, they would be more productive workers, and therefore, would receive a higher salary (Welch, 1973). To the extent that the various minority/sex groups have similar levels of education (as well as other characteristics) but receive different salaries, then the groups must have different pay structures. The existence of different pay structures which are determined by the employer may be evidence of the failure to

apply standards of merit in a universal manner.

Two regression models predicting salary are presented in Table 2. The first model contains variables common in human capital analyses; age, square of age, years of federal service, square of years, veterans' preference, location in D.C., and level of education. Model II includes the above variables and adds those employment attributes over which the employer exercises considerable control: supervisory status, position occupied (competitive or excepted), and occupational group (entered as a set of dummy variables for administrative, technical, clerical, and other groups with the professional as the omitted category). These last three variables are of special interest, for by controlling these three factors, we are assuming that placement into job streams has been made without regard to minority group or sex.

While the analysis presented here is not directed toward assessing the returns to particular employment characteristics, some brief comment on the results presented in Table 2 is in order before proceeding to the decomposition of salary differences into institutional and employer discrimination.

First, consistent with the findings of studies cited earlier, the monetary returns to age, education, years of federal service, and employment in the D.C. area are all higher for nonminority males than for any other group in both Model I and Model II. The more negative coefficient for nonminority males on the disabled veterans variable compared to the coefficients for the other groups may indicate that the "handicaps" of race, sex, and physical disability are not strictly cumulative in their effect on salary. The other veterans dummy variable also has a negative impact on salary. This result may suggest that the veterans' preference, applied at entry to the federal service, places individuals of lower ability into jobs for which they would otherwise not qualify, while subsequent promotions are affected more by ability than by the veterans' preference. If so, then the larger absolute value of the coefficient for nonminority males may mean that the salary return to a given

To assess the possible differences between the active population and the terminating population, a regression analysis of the outflow population from June, 1975, to June, 1977, was undertaken. The amount of salary disparity between nonminority males and the three minority/sex groups is substantial for the total sample of terminators, although the differences between minority/sex groups are not quite as large as in the active population. Among terminators, minority females earn approximately \$2,658 less than nonminority males; minority males earn \$1,762 less; and nonminority females, \$2,750 less. Similar results are also obtained when terminating employees are analyzed separately by occupational group. Therefore, the impact of differential rates of termination by ability and minority/sex group should have little impact on further analyses of salary differences.

Table 2. Unstandardized Regression Coefficients from Two Models Predicting Salary for Four Minority/Sex Groups, 1977

Regression Variables	Minority/Sex Group							
	Nonminority Males		Nonminority Females		Minority Males		Minority Females	
	Model I	Model II	Model I	Model II	Model I	Model II	Model I	Model II
Age	605.7	422.0	228.7	143.2	513.9	316.6	251.6	140.4
Age ²	-5.9	-3.8	-2.7	-1.8	-4.8	-3.0	-2.9	-1.5
Years	571.1	523.0	418.5	415.2	343.8	378.3	417.6	383.7
Years ²	-8.9	-8.9	-5.8	-7.0	-6.7	-7.4	-7.8	-7.7
Disabled vet	-2364.3	-1665.1	-1575.1	-1398.8	-1299.0	-548.2	-2245.7	-1451.1
Other vet	-905.6	-757.0	48.4	-308.9	-865.4	-370.1	-169.7	-209.3
D.C.	4685.9	4022.8	2207.0	2144.9	1567.7	1352.7	698.7	952.4
Education	1516.1	743.6	1110.5	550.2	1353.9	577.9	956.8	506.2
Supervisory		2340.0		1601.7		2858.5		2356.0
Position		-1219.1		-1893.3		-2179.6		-2263.0
Administrative		-1190.8		124.5		-2351.2		-34.7
Technical		-6190.1		-3293.8		-7778.0		-3396.1
Clerical		-7467.8		-4309.8		-8637.0		-3961.2
Other		-7426.7		-4625.3		-8566.5		-5425.1
Regression Constant	-23,600	-3,775	-10,694	3,385	-18,339	3,803	-9,035	4,056
R ²	.518 ^a	.644 ^a	.459 ^b	.642 ^c	.419 ^d	.615 ^b	.415 ^b	.638 ^e
N	8,461	8,461	4,326	4,326	1,557	1,557	1,568	1,568

^a All variables significant at $p \leq .001$.

^b All variables except disabled vet and other vet significant at $p \leq .001$.

^c All variables except disabled vet, other vet, and administrative significant at $p \leq .001$; disabled vet significant at $p \leq .05$.

^d All variables except disabled vet and other vet significant at $p \leq .001$; disabled vet significant at $p \leq .05$; other vet significant at $p \leq .01$.

^e All variables except disabled vet, square of age, and administrative significant at $p \leq .001$; square of age significant at $p \leq .01$.

level of ability is larger for that group than for the other three groups. The remaining results from Model II indicate that differences in the returns to supervisory status and occupational stream are generally greater between males and females than between the two ethnic groups within either sex. Finally, the salary advantage of employment in the excepted service is greater for minorities and women than for nonminority males. It should be reiterated, however, that excepted positions, while carrying a net salary advantage according to these findings, are also subject to fewer employment safeguards. The resultant job insecurity may or may not fall equally on members of different minority/sex groups.

In summary, then, the results of the separate regression analyses in Table 2 suggest that each minority/sex group has a substantially distinct pay structure which, in part, contributes to different average salaries for the four groups.

The separate regression analyses just

discussed permit the decomposition of salary differences by minority/sex group into institutional and employer components. The method to be used involves predicting salary for each of the minority/sex groups while systematically varying the mean values and pay structures as in Table 3 (cf. Malkiel and Malkiel, 1973; Kluegel, 1978). When salary is predicted for each group using its own pay structure and own mean values for the independent variables, considerable differences are apparent. Nonminority females earn only 62.6% of the salary of nonminority males; minority males earn 80.6%; and minority females earn 62.3%. Even when occupational group is controlled as in Model II, there remain substantial salary differences between nonminority males and the other groups.

Part of these salary differences are due to the fact that each group has different levels of educational attainment, supervisory status, age, and so forth. In fact, if all groups had the same mean values as

INCOME INEQUALITY IN THE FEDERAL CIVILIAN GOVERNMENT 475

Table 3. Predicted Salary (in Dollars) for Four Minority/Sex Groups in Two Models (Varying Pay Structure and Mean Values)

Model	Minority/Sex Group						
	Nonminority Males	Nonminority Females		Minority Males		Minority Females	
Model I for Salary Predicted From:	A	B	B/A in %	C	C/A in %	D	D/A in %
(1) Own Pay Structure and Own Mean Values	18,508	11,593	62.6	14,917	80.6	11,539	62.3
(2) Own Pay Structure and Non- minority Male Mean Values	18,508	14,083	76.1	16,139	87.2	13,397	72.4
(3) Nonminority Male Pay Struc- ture and Own Mean Values	18,508	15,242	82.4	17,233	93.1	15,363	83.0
Model II for Salary Predicted From:							
(1) Own Pay Structure and Own Mean Values	18,411	11,718	63.6	15,642	85.0	10,908	59.2
(2) Own Pay Structure and Non- minority Male Mean Values	18,411	14,896	80.9	17,872	97.1	13,731	74.6
(3) Nonminority Male Pay Struc- ture and Own Mean Values	18,411	13,884	75.4	16,162	87.2	13,681	74.3

nonminority males, the salary differences would be substantially reduced as the data on line (2) suggest. From the substitution of nonminority male mean values into the regression equations for each of the minority/sex groups, we can obtain an estimate of what each group would receive in salary if all groups had levels of educational attainment, years of federal service, etc., equal to nonminority males. The estimates in Table 3 show that minority women would earn less than three-fourths of the salary of nonminority males, while minority males would earn 87.2% of the average nonminority male salary. However, if all groups were compensated at the same rate as nonminority males (i.e., all groups had that pay structure), the salary differences between nonminority males and the other groups also would be reduced considerably as indicated in line (3). The computations in line (3) compared with those of line (2) suggest that pay structure has a substantial impact on the salary differences between minority/sex groups. If all minority/sex groups had the identical pay structure as nonminority males, the salaries would more nearly approximate nonminority males than if their mean values were equal to nonminority males but their own pay structure was intact.

The data presented for Model II are of note in that, first, minority males come

very close to parity with the salary of nonminority males when placement variables have been controlled. However, both groups of women appear to fare even worse under the assumption of equality of job placement, although this pattern is not completely consistent.

In important respects, differences due to employee's mean values may be taken as analogous to the concept of institutionalized discrimination whereas differences due to pay structure may correspond to employer discrimination. Table 4 compares the percentage of the salary differences due to different characteristics with the percentage due to different pay structures, using the method of indirect standardization employed by Malkiel and Malkiel (1973) and Smith (1976). To obtain the entries in Table 4, we performed the following computations on the data presented in Table 3:

$$\begin{aligned}
 &\text{Gross difference in mean salary} \\
 &(\text{nonminority females}) = (1)A - (1)B; \\
 &\text{Difference due to different mean values} \\
 &(\text{nonminority females}) = (3)A - (3)B; \\
 &\text{Difference due to different pay structures} \\
 &(\text{nonminority females}) = (3)B - (1)B.^2
 \end{aligned}$$

² There is an index number problem presented in this method of analysis since there are two sets of regression equations and two sets of mean values by

Table 4. Analysis of Salary Differences between Nonminority Males and Other Minority/Sex Groups (Assuming Minimum Differences Due to Pay Structure)

Source of Salary Differences in:	Minority/Sex Group					
	Nonminority Females		Minority Males		Minority Females	
	Dollars	%	Dollars	%	Dollars	%
Model I						
Gross Difference in Mean Salary with Nonminority Males	6,915	100.0	3,591	100.0	6,969	100.0
Difference Due to Different Mean Values	3,266	47.2	1,275	35.5	3,145	45.1
Difference Due to Different Pay Structures	3,649	52.8	2,316	64.5	3,825	54.9
Model II						
Gross Difference in Mean Salary with Nonminority Males	6,693	100.0	2,769	100.0	7,503	100.0
Difference Due to Different Mean Values	4,527	67.6	2,249	81.2	4,730	63.0
Difference Due to Different Pay Structures	2,166	32.4	520	18.8	2,773	37.0

The findings reported in Table 4 make it clear that a considerable portion of the salary differences between nonminority males and other groups may be due to different pay structures. Looking only at

which to standardize. That is, we could perform the following computations and obtain decomposition estimates:

Difference due to mean values (nonminority females) = (2)B - (1)B;

Difference due to pay structure (nonminority females) = (2)A - (2)B.

These computations would yield smaller estimates of salary differences due to mean values and larger estimates due to differences in pay structure, especially for both groups of women. The percentage entries for Table 4 would be as follows:

	Non-minority Females	Minority Males	Minority Females
Model I			
Difference due to different means	36.0	34.0	26.7
Difference due to different pay structures	64.0	66.0	73.3
Model II			
Difference due to different means	47.5	80.5	37.6
Difference due to different pay structures	52.5	19.5	62.4

The actual amounts of salary disparity which are due to differences in mean values and pay structures fall somewhere between these figures and those presented in Table 4; the latter were selected for discussion in the text since they give the more conservative estimate of employer discrimination.

Model I we find that minority males, on the average, make \$1,275 less than non-minority males due to their different characteristics. However, another \$2,316 (or nearly two-thirds of the total salary difference) is due to different returns to their investments. For the two groups of women, we find that over half of their salary differences with nonminority males is due to different returns when level of investment has been held constant.

If we examine Model II, which controls for placement into job stream, salary differences due to different pay structures are lowered considerably. Nonetheless, differences in salary due to pay structures vary from 18.8% for minority males to 37.0% for minority females. This finding is partially consistent with Spilerman (1977), who argues that occupational placement is a key element in the determinants of earnings. That is, if placement into job streams is performed using only merit criteria universally applied, then income inequality should always be assessed "net of" job stream (assuming there should be different pay for different jobs). If, however, sex and/or race is used to determine job suitability, then job placement itself becomes a suspect personnel decision and contributor to income inequality.

Discussion

The findings presented in this paper make possible several observations on

race/sex income inequality. First, salary differences between minority/sex groups are considerable with a large number of employment-related variables controlled. Even when placement variables are controlled, these differences remain.

What can explain these salary differences? It may be too facile merely to argue that individual racism and sexism are the causes of all differences in the pay structures found here. There is, for example, no direct measure of ability used here. Furthermore, we have no estimate of work experience in the private sector. However, entry into the federal service is generally accomplished through a standardized test on which all persons must perform well before they can gain employment, and most of the effects of private experience should be captured in the controls for age and the square of age.

Moreover, the variables used to control for differences between the minority/sex groups are implicitly assumed to operate in a nondiscriminatory manner. Yet the very opposite may be true. For example, supervisory status has been shown to have an effect on salary and to vary by minority status (Kluegel, 1978). If supervisory positions are allocated in a discriminatory manner in the federal government, then by controlling its effect, we have eliminated one nonmerit source of income disparity due to pay structure. Similarly, differences in salary may occur through discriminatory placement into occupational streams as noted earlier. However, our purpose in this research was to make as strict an examination of salary differences as possible. In this manner, we can be relatively certain that we would not overstate the presence of employer contributions to salary disparities. That is, this method allows for the possibility of group preferences or dispositions toward particular work situations (i.e., it might be possible that women *prefer* clerical jobs to others; that minorities *prefer not* to be supervisors, etc.). It is more likely, of course, that placement into job stream is a function of both the employer's decision regarding an employee's ability, and a preference expressed by an employee. Therefore, the amount of pay disparity due to differences in pay structure prob-

ably falls somewhere between the estimates from Model I and Model II.

We have also seen that the standardized salary difference between nonminority and minority women is considerably smaller than the difference between any other two groups. That is, minority women resemble nonminority women more closely than minority women resemble minority men, although the pay structures of the two groups of women are less similar when job placement is controlled. Nonetheless, minority women receive lower returns to education as well as a lower percentage of the nonminority male salary than any other group. At a pragmatic level, these findings are of obvious importance to equal employment opportunity efforts, as well as being instructive with respect to the ascriptive nature of our society.

Third, these findings can be related to the private sector of the economy and the presence of possible minority/sex discrimination there. As noted earlier, some limited evidence (Smith, 1976) and considerable plausible conjecture would suggest that discrimination by race and sex in the private sector substantially exceeds that reported here for the federal service.

Finally, these data bring indirect evidence to the debate surrounding returns to education and quality of schooling. The results of studies of returns to education by minority groups show such large differences between blacks and whites that we might wonder whether black education should be discounted two to three years if it is of poorer quality than white education (see Stolzenberg, 1975). However, we know of no conventional wisdom that claims that the quality of minority male education is substantially higher than the quality of minority female education (and similarly for nonminority males and females). Yet the returns to schooling vary more by sex within one minority group than within either sex group. While this pattern may be affected by particular occupational placement, the fact that both groups of women have lower returns to education than do either group of men does itself raise questions regarding the quality of schooling argument.

Conclusions

In general, this research has confirmed the existence of minority/sex disparities within an employer which has a long history of attempts to manage its personnel system in a meritorious manner. Such salary disparities exist thirteen years after the passage of the 1964 Civil Rights Act, and eight years after Executive Order 11478. While employers are required to do little with regard to individual characteristics a worker brings into the labor market, the results in this study suggest that as much as one-half of the salary disparities between minority/sex groups could be eliminated in future cohorts of employees by changes in employer practices alone.

In particular, this study lends strong support to the contention that the concept of institutional discrimination should be carefully reexamined. To be sure, there are situations in which the concept is straightforward—as, for example, in the *proper* use of standardized aptitude tests for employment selection. However, when universalistic criteria must be applied according to the discretion of an individual decision maker, as is often the case in personnel actions, the evidence presented in this research suggests that what is called institutional discrimination may be an unexamined pretext for employer discrimination.

REFERENCES

- Althausen, Robert P. and Michael Wigler
1972 "Standardization and component analysis." *Sociological Methods and Research* 1:97-135.
- Ashenfelter, Orley
1972 "Racial discrimination and trade unionism." *Journal of Political Economy* 80:435-64.
- Becker, Gary S.
1957 *The Economics of Discrimination*. Chicago: University of Chicago Press.
1964 *Human Capital*. New York: National Bureau of Economic Research.
- Becker, Gary S. and Barry R. Chiswick
1966 "Education and the distribution of earnings." *American Economic Review Paper and Proceedings* 56:358-69.
- Benokraitis, Nijole and Joe R. Feagin
1977 "Institutional racism: a perspective in search of clarity and research." Pp. 121-43 in C. V. Willie (ed.), *Black/Brown/White Relations: Race Relations in the 1970s*. New Brunswick: Transaction.
- Bowles, Samuel and H. Gintis
1976 *Schooling in Capitalist America*. New York: Basic Books.
- Butler, John Sibley
1976 "Inequality in the military: an examination of promotion time for black and white enlisted men." *American Sociological Review* 41:807-18.
1978 "Military inequality: reply to Hauser." *American Sociological Review* 43:607-10.
- Caplow, Theodore
1954 *Sociology of Work*. Minneapolis: University of Minnesota Press.
- Doeringer, Peter B. and Michael J. Piore
1971 *Internal Labor Markets and Manpower Analysis*. Lexington: Heath.

APPENDIX

MEANS AND STANDARD DEVIATIONS OF ALL INDEPENDENT VARIABLES FOR REGRESSION ANALYSES (TABLE 2)
BY MINORITY/SEX GROUP

Independent Variables	Minority/Sex Group							
	Nonminority Males		Nonminority Females		Minority Males		Minority Females	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	44.1	11.3	40.4	13.2	42.2	11.3	37.5	11.2
Age ²	2072.9	989.7	1802.0	1095.5	1908.6	957.5	1534.1	900.4
Years	16.9	9.8	10.6	8.6	16.4	9.7	10.8	8.2
Years ²	383.4	371.2	186.0	264.2	363.4	348.9	183.0	255.2
Disabled vet	.10	.30	.004	.06	.06	.25	.003	.05
Other vet	.59	.49	.07	.25	.63	.48	.04	.20
D.C.	.12	.32	.14	.35	.16	.37	.24	.43
Education	14.4	2.6	13.3	1.9	13.6	2.2	13.1	1.6
Supervisory	.17	.37	.07	.26	.10	.30	.06	.23
Position	.63	.48	.83	.37	.50	.50	.79	.41
Administrative	.27	.45	.13	.34	.17	.38	.10	.31
Technical	.17	.38	.19	.39	.19	.40	.22	.41
Clerical	.30	.46	.57	.50	.49	.50	.61	.49
Other	.02	.14	.004	.06	.04	.20	.006	.08

INCOME INEQUALITY IN THE FEDERAL CIVILIAN GOVERNMENT 479

- Duncan, Otis D.
1969 "Inheritance of poverty or inheritance of race?" Pp. 85-110 in Daniel P. Moynihan, (ed.), *On Understanding Poverty*. New York: Basic Books.
- Harrison, Bennett
1972 *Education, Training, and the Urban Ghetto*. Baltimore: Johns Hopkins University Press.
- Hauser, Robert M.
1978 "On inequality in the military." *American Sociological Review* 43:115-8.
- Jencks, C., M. Smith, H. Acland, M. Bane, D. Cohen, H. Gintis, B. Heyns, and S. Michelson
1972 *Inequality*. New York: Basic Books.
- Jones, James M.
1972 *Prejudice and Racism*. Reading: Addison-Wesley.
- Kaysen, Carl
1973 "New directions for research." Pp. 147-50 in L. C. Solmon and P. J. Taubman (eds.), *Does College Matter?* New York: Academic Press.
- Kluegel, James R.
1978 "The causes and costs of racial exclusion from job authority." *American Sociological Review* 43:285-301.
- Malkiel, Burton G. and Judith A. Malkiel
1973 "Male-female pay differentials in professional employment." *American Economic Review* 63:693-705.
- Mincer, Jacob
1970 "The distribution of labor incomes: a survey with special reference to the human capital approach." *Journal of Economic Literature* 8:1-26.
1974 *Schooling, Experience, and Earnings*. New York: National Bureau of Economic Research.
- Mosher, Frederick C.
1965 "Features and problems of the federal civil service." Pp. 163-211 in Wallace S. Sayre (ed.), *The Federal Government Service*. Englewood Cliffs: Prentice-Hall.
- Oaxaca, Ronald
1973 "Male-female wage differentials in urban labor markets." *International Economic Review* 14:693-709.
- Schultz, T. W.
1961 "Investment in human capital." *American Economic Review* 51:1-17.
- Smith, Sharon F.
1976 "Pay differentials between federal government and private sector workers." *International Labor Relations and Review* 29:179-97.
- Snyder, David and Paula M. Hudis
1976 "Occupational income and the effects of minority competition and segregation: a reanalysis and some new evidence." *American Sociological Review* 41:209-34.
- Spilerman, Seymour
1977 "Careers, labor market structure, and socio-economic achievement." *American Journal of Sociology* 83:551-93.
- Stolzenberg, Ross M.
1975 "Education, occupation and wage differences between white and black men." *American Journal of Sociology* 81:209-32.
- Suter, Larry E. and Herman P. Miller
1973 "Income differences between men and career women." *American Journal of Sociology* 78:962-74.
- Weiss, Randall
1970 "The effects of education in the earnings of blacks and whites." *Review of Economics and Statistics* 52:150-9.
- Welch, Finis
1973 "Black-white differences in returns to schooling." *American Economic Review* 63:893-907.
- Yetman, Norman R. and C. Hoy Steele (eds.)
1971 *Majority and Minority*. Boston: Allyn and Bacon

SUBURBAN CHANGE AND PERSISTENCE*

ANDREW COLLVER

State University of New York at Stony Brook

MOSHE SEMYONOV

University of Nebraska

American Sociological Review 1979, Vol. 44 (June):480-486

A method for the quantitative analysis of change is developed, and demonstrated by a study of changes in the socioeconomic status (SES) characteristics of 89 Long Island suburban communities 1960-1970. Three theoretical models in the literature on suburban change are shown to be related to statistical measures of change of the mean, change of dispersion and positional change. Because of failure to recognize that there are three mathematically independent dimensions of change, high correlations between measurements of a status characteristic at two points in time were formerly misinterpreted to mean a lack of change. Also, previous studies probably erred in generalizing from only one indicator of suburban SES, educational attainment. In this study, three SES variables, education, occupation and income, are shown to have different patterns of change on the three dimensions.

Change and persistence are complementary aspects of every active, open system of relationships. Whether a system is to be described as changing or stationary depends on the conceptual and time frames within which it is viewed and the sensitivity of the instruments for detection of change. Too often, different observers of the same phenomena will offer conflicting or contrasting interpretations of change because they begin from different theoretical positions or use different methods of measurement, or both. Our purpose here is to develop and demonstrate the use of a method for analysis of change that will resolve apparent disagreements between theories, help to clarify the relations between different theoretical perspectives and tighten the logical connections between theory and evidence.

The field selected for a demonstration of the method is the study of change of socioeconomic status (SES) characteristics of American suburbs. In the literature on this subject we find three dis-

tinct perceptions. Some investigators see trends of rising or falling average status of suburbs; others perceive a widening range of inequality between rich and poor suburbs; and still others are impressed by the tendency of suburbs to maintain their relative positions in terms of socioeconomic status. All three views are supported by empirical data and persuasive theoretical arguments, and yet they seem inconsistent with one another, if not contradictory.

Three Conceptual Approaches

In a paper entitled "Suburban Persistence," Farley (1964) found high correlations between suburbs' earlier and later educational characteristics. In this, his findings and discussion were consistent with those of B. Duncan (1964), and Taeuber and Taeuber (1965:174). Interpreting the high correlations as "persistence," Farley concluded that suburbs tend to retain their socioeconomic characteristics over long periods of time. In a large-scale replication of Farley's study, Guest (1978) again demonstrated persistence, but like Farley, had some difficulty interpreting the findings in relation to theories of urban ecology. Farley (1964:47) remarked that his findings were consistent with Burgess's (1925) concentric zone model, but then went on to say that "... once a suburb is established, the population that moves into that suburb tends to resemble the population already

* Direct all communications to: Andrew Collver; Department of Sociology; State University of New York at Stony Brook; Stony Brook, NY 11794.

This is a revised version of a paper presented at the annual meeting of the American Sociological Association, San Francisco, 1978.

Critical comments by R. W. Hodge, Andrea Tyree and John Logan are appreciatively acknowledged. Linda Sterns collaborated in collection and preparation of data.

living there." Guest found the latter conclusion in conflict with Burgess's notion that successive in-migrants tend not to be of the same status as the existing residents. As we shall show, however, the difficulty of reconciling the empirical findings with theory is easily avoided, for before-after correlations of status variables cannot be predicted from the Burgess model.

The concentric zone model (Burgess, 1925; Hawley, 1950; Hoover and Vernon, 1962; Schnore, 1972; Guest, 1974) describes the dynamics of a region continually in the process of change. According to this model, neighborhoods are likely to go through a life cycle in which the older and more centrally located neighborhoods experience a decline in their relative socioeconomic status, caused by invasion and succession by lower status groups as higher status residents move farther from the city center. The initial growth of the outer suburbs may produce a marked rise in status as compared with the older rural communities that they engulf. As will be shown, this model is not incompatible with the suburban persistence model, once both are correctly understood in mathematical terms. If the tendency of established suburbs is to decline gradually in SES as they age, the result to be expected is the subtraction of a constant from each suburb, affecting the mean but not the correlation coefficient, which is sensitive only to standardized deviations from the mean.

A newer model of suburban development, which we will call the "theory of consolidation advantages," leads to the expectation of a widening gap between rich and poor suburbs. In this model, as described by Logan (1976; 1978), communities seek to affect the growth process in order to maintain or create inequalities among localities to their own advantage. Places with early advantages, by making full political use of their resources, can reinforce and improve their relative positions within the system of places. At first this theory may appear to be inconsistent with the suburban persistence findings. On closer examination, however, we find that it assumes or requires a high degree of persistence in combination with increas-

ing dispersion.¹ It is a pattern of change that cannot be measured by the correlation coefficient alone.

Is the differentiation of suburbs by SES persistent, or is it changing? Neither theories nor research methods have offered clear answers to this question, largely because theories tend to focus on only one or another aspect of change and because the tools used for analysis of change have not been designed appropriately for the purpose. A conceptual model is needed that will deal with all dimensions of change, and the statistical tools employed should enable us to answer the following three questions: (1) Have the averages of SES characteristics of suburbs increased, decreased or stayed the same (Burgess model and other evolutionary theories)? (2) Have the differences between suburbs widened or narrowed (Logan's consolidated advantages model)? (3) To what degree have the individual suburbs maintained or changed their relative positions in the status hierarchy (Farley's suburban persistence model)?

By simultaneously examining all the dimensions of suburban differentiation, we should be able to formulate a more complete understanding than is provided by any one approach. In the following analysis we develop a method for measuring three components of change and demonstrate its use with data from one suburban region 1960-1970.

Descriptive Overview

The suburbs taken for this comparison are 89 communities of Nassau and Suffolk counties, Long Island, New York, in 1960 and 1970. The variables selected as descriptors of these communities are *education*, median years of school completed,

¹ In quantitative terms, if a linear model is assumed, the consolidated advantages hypothesis says that the unstandardized regression coefficient, b_{yx} , is greater than 1—that the value, Y , of a variable at t_2 is predicted by the regression line to be farther from the mean than its previous value, X , was at t_1 . Since $b_{yx} = r_{yx} s_y/s_x$, we can see that achievement of a slope greater than 1.0 requires high enough values of both r_{yx} and s_y/s_x to produce a product greater than 1.0. Assumption of a curvilinear relation between Y and X would require appropriate modifications of the preceding.

Table 1. Means and Standard Deviations (Unweighted) of SES Variables for 89 Long Island Communities, 1960 and 1970

	Median Years School	Pct. Upper White- Collar	Median Family Income
\bar{Y} 1970	12.61	39.54	\$12,192
\bar{X} 1960	11.95	36.89	8,683
s_y 1970	.90	14.84	4,732
s_x 1960	.98	14.72	2,121
\bar{Y}/\bar{X}	1.05	1.07	1.404
s_y/s_x	.92	1.01	2.231

for the population aged 25 and over; *occupation*, percentage of the male civilian employed labor force in the upper status, white-collar occupations of professional, technical and kindred workers and managers, proprietors and officials, excluding farm; and *income*, median family income in 1959 and 1969, corrected for inflation in 1969.²

Data were obtained from publications of the U.S. Census of Population and Housing. Of the 144 places in the two-county region with over 2,500 population in 1970, 89 had comparable data for the two census dates. All 89 had over 2,500 inhabitants in 1960. Data for the analysis were taken directly from the census or computed from census tabulations, except that median family incomes in 1960 had to be estimated for 12 high income communities of less than 10,000 population.³ Unweighted means and standard deviations of the three SES variables are shown in Table 1.

Means of all three variables increased during the decade, slightly in the case of education and occupation, and very substantially in the case of income (corrected for inflation). The standard deviation of education decreased slightly, that for occupational status remained virtually unchanged and the standard deviation of median family income, in 1959 dollars, more than doubled. The increase in dis-

Table 2. Correlation Matrix of 1960 and 1970 Values of SES Characteristics, for 89 Long Island Communities

	X1 Educa- tion 1960	X2 Occu- pation 1960	X3 Income 1960	Y1 Educa- tion 1970	Y2 Occu- pation 1970	Y3 Income 1970
X1		.839	.777	.783	.754	.663
X2			.929	.839	.910	.857
X3				.820	.867	.898
Y1					.819	.867
Y2						.869

person was greater than the increase in the mean of family income so that the standard deviation increased not only in absolute terms but increased relative to the mean.

Correlations between the 1960 and 1970 values of SES variables are given in Table 2. At the zero order, all three SES variables had high positive correlations with one another. Of the three, years of schooling completed had the lowest correlation with the others and the lowest correlation between 1960 and 1970 values. Years of schooling completed was the least persistent of the three variables over the decade.

Looking at the correlations as indicators of the stability of the suburban SES hierarchy, our comparison of Long Island communities in 1960 and 1970 shows a substantial degree of persistence. From one point of view, it can be said that these communities have a strong tendency to maintain their relative standings in the regional status hierarchy. Looked at another way, however, the coefficients may be regarded as measures of change rather than persistence. The relative positions of many of these communities in 1970 could not be predicted precisely from their positions in 1960. That the correlations are substantially less than 1.00 is an indication that there is some looseness in the system of stratification of suburban communities and that communities did experience upward and downward positional change.

Three Components of Change

In order to properly address the issue that has been raised concerning change vs. persistence, we need a statistic that will show the degree to which a char-

² Median income 1969 was corrected for inflation 1959-1969 by the factor 1/1.294 based on U.S. Department of Commerce estimates for the New York metropolitan region.

³ For these 12 cases, median family income was estimated by the regression of median family income on percentage of families with incomes over \$10,000 calculated for the other 77 cases. The correlation between the two income measures was found to be .94.

acteristic at a later point in time can be predicted from the same characteristic at an earlier point in time. Also, we require standardized measures of change in the mean of a variable and in its dispersion.⁴

Some of these requirements were met, or nearly met, by the measures of occupational mobility introduced by McClendon (1977). His work provides some of the basic logic for the development of our measures. Like McClendon's, our measures of persistence and change are derived algebraically by decomposing the sum of squared differences $\Sigma (Y-X)^2/N$. (In this and other equations, N represents N , $N-1$ or other appropriate degrees of freedom.) Here the previous value, X , is regarded as the "expected" value of Y , and $Y-X$ is the deviation of Y from the expected value. Thus, $\Sigma (Y-X)^2/N$ is a measure of dispersion of Y around the line $Y = X$. Each observation, X or Y , may be expressed as the mean plus a deviation from the mean. This deviation may be formulated as the product of a standard score times the standard deviation. The general definition of total change, then, is:

$$\Sigma(Y-X)^2/N = \Sigma[(\bar{Y} + Z_y s_y) - (\bar{X} + Z_x s_x)]^2/N. \quad (1)$$

Our approach in breaking this equation down into components is to solve for one component while assuming that the other two components are zero. For reasons that will be apparent in equation (4), all measures will be standardized by dividing by $2s_x^2$.

1. *Change of mean.* Assuming that there is no change in the relative positions of individuals in the distribution of Y as compared with their positions in the distribution of X , for each individual, $Z_y = Z_x$. If there has been no change of dispersion, $s_y = s_x$. Under these assumptions, equation (1), standardized by dividing by $2s_x^2$, becomes:

$$\begin{aligned} \text{Change of mean} \\ &= \Sigma(\bar{Y} - \bar{X})^2/2s_x^2 N \\ &= (\bar{Y} - \bar{X})^2/2s_x^2. \end{aligned} \quad (2)$$

⁴ Feldman (1972) recognized the three types of change discussed here. Increased dispersion, which he called *accentuation* is examined at length in Feldman and Weiler (1976).

2. *Change of dispersion.* If there is no change in the mean and if each individual's position as measured by Z remains unchanged, we may substitute \bar{X} for \bar{Y} in equation (1) and standardize by $2s_x^2$ to obtain:

$$\begin{aligned} \text{Change of dispersion} \\ &= \Sigma(Z_y s_y - Z_x s_x)^2/2s_x^2 N \\ &= \Sigma(Z_y^2 s_y^2 - 2Z_y Z_x s_y s_x \\ &\quad + Z_x^2 s_x^2)/2s_x^2 N; \end{aligned}$$

and since $\Sigma Z_y^2/N=1$ and $\Sigma Z_x^2/N=1$ and $\Sigma Z_y Z_x/N=r$, this simplifies to:

$$=(s_y^2 + s_x^2 - 2s_y s_x r_{yx})/2s_x^2.$$

When $r=1$, this becomes:

$$(s_y - s_x)^2/2s_x^2. \quad (3)$$

3. *Positional change.* If there is no change in the mean or standard deviation, the only change is in relative positions or Z scores. Substituting \bar{X} and \bar{Y} and s_x for s_y in equation (1) and subtracting, we obtain:

$$\begin{aligned} \text{Positional change}^5 \\ &= \Sigma(Z_y s_x - Z_x s_x)^2/2s_x^2 N \\ &= \Sigma(Z_y^2 s_x^2 - 2Z_y Z_x s_x^2 + Z_x^2 s_x^2)/2s_x^2 N \\ &= 1 - r_{yx}. \end{aligned} \quad (4)$$

Positional change is often referred to as the "regression effect," the tendency of individuals or successive generations on the average, over time, to fall back toward the mean. Graphically, it is a clockwise rotation of the regression slope, β_{yx} , away from the 45-degree line, $Y = X$.

4. *Combined effect of change of dispersion and positional change.* Up to this point the basic measures of change have been derived assuming that as each of the three components changes the other two are constant. In reality, of course, all three may change at the same time, and total change is the net result of their movements. Change of the mean has a simple additive effect which has no influence on the effects of the other two components. Once the effect of change of the mean has been taken out, however, the remaining change is partly the sum and

⁵ The term *positional change* was suggested by Duncan et al. (1961). McClendon (1977) adopted $1-r$ as his measure of exchange mobility.

partly the product of the other two components.

In the definition of definitional change, $1-r$, it was assumed that $s_y = s_x$. Any change from this equality produces a change in the effect of $1-r$, in the following manner:

$$\begin{aligned} \text{Combined effect} \\ = [2(s_y s_x - s_x^2)(1-r)]/2s_x^2. \end{aligned} \quad (5)$$

An increase in dispersion enlarges the effect of $1-r$ and a decrease diminishes it. Correspondingly, a change in $1-r$ heightens or reduces the effect of a change of dispersion.

5. *Total change.* Recombining the three components, the complete equation for change is:

$$\begin{aligned} & \frac{\Sigma(Y-X)^2/N}{2s_x^2} \\ &= \frac{(\bar{Y}-\bar{X})^2}{2s_x^2} + (1-r) + \frac{(s_y - s_x)^2}{2s_x^2} \\ &+ \frac{2(s_y s_x - s_x^2)(1-r)}{2s_x^2}. \end{aligned}$$

Regional Measures of Change and Persistence

The change and persistence measures for Long Island communities are summarized in Table 3. Comparing the three SES variables, we see that income had by far the highest coefficient of total change and occupational composition had the lowest. Change of the mean contributed over half of the change in education and income, and virtually nothing in occupation. Positional change accounted for nearly half of the change on the education dimension and most of the small amount of change in occupational status, but only a little more than 4% of the change in income. Change of dispersion was large only in the case of median family income, zero for occupation and negligible for education. Of the three variables, income has by far the highest coefficients of structural change.⁶

⁶ After some discussion we decided not to adjust the income figures beyond correcting them for inflation. Since SES is a relative matter, one may argue

Table 3. Components of Change of SES Characteristics for 89 Long Island Communities, 1960-1970

Component	Pct.		
	Median Years School	Upper White Collar	Median Family Income
a) Change of Mean $(\bar{Y}-\bar{X})^2/2s_x^2$	.222	.016	1.368
b) Change of Dispersion $(s_y-s_x)^2/2s_x^2$	.003	.000	.758
c) Positional Change $(1-r_{yx})$	.217	.090	.102
d) Dispersion and Position $[2(s_y s_x - s_x^2)(1-r_{yx})]/2s_x^2$	-.020	.000	.126
2) Total Change*	.422	.107	2.354

* Sum of the components.

As a computation check, total change may be found either by directly computing

$$\frac{\Sigma(Y-X)^2/N}{2s_x^2}$$

from individual data or by calculating it from aggregate values by:

$$[(\bar{Y}-\bar{X})^2 + s_y^2 + s_x^2 - 2s_y s_x r]/2s_x^2.$$

Although the three indicators of SES are highly intercorrelated, they were evidently subject to different sets of influences during the 1960-1970 decade. Multiple regression analyses (see fn. 7) have shown that positive positional change of the educational level of suburbs is associated with high rates of population increase, little increase of occupational status and still less increase of income. Our explanation for this is that the adult male newcomers to rapidly growing suburbs were high in education, but being young, had not yet worked their way to upper status occupations or higher incomes.

Meanwhile, in both established and growing suburbs, the principle of consolidated advantages (or disadvantages) appears to be at work, widening the gap between rich and poor communities. While it

that the pursuit of SES is a zero-sum game and that in effect the increase of incomes represents inflation of the cost of SES. Under this interpretation the income figures for 1969 should be further corrected by an "SES inflation factor." The issue of how to obtain this factor is too complex to explore in this paper.

is clear that cost of home ownership is the primary mechanism for selection into the exclusive suburbs or gravitation to the poorer communities, it is not clear to us why the suburbs did not become increasingly differentiated on occupation and education as well as income. A clearer perception of the relations between the three dimensions of SES must await comparative analyses of different regions and time periods. The patterns of widening income inequality along with narrowing educational inequality may be unique to a certain stage of development of a suburban region, or to the 1960–1970 decade or to a particular type of economic or political structure. These questions can only be confronted adequately in comparative studies.

With the full display of components of persistence and change in Table 3, it can be seen that attention to persistence alone, as represented by r , leads to an incomplete description of trends over time. Moreover, persistence has been taken to imply lack of any kind of change. As we have shown, there are other kinds of change that are mathematically independent of the correlation coefficient. An increase in the dispersion, as in income, is a change in the range of differences between suburbs that has significant sociological implications. An increase of the mean, as in education and income, signifies that most communities experienced a gain in status at least in the absolute sense if not in relation to other communities. The positional change coefficients reveal that there were significant changes in the relative SES positions of many suburbs.⁷

⁷ Checking against the possibility that positional change may result from measurement errors and chance fluctuations, we treated each of the three SES measures for 1970 as the dependent variable in a multiple regression analysis, and introduced its 1960 value as the first independent variable. The remaining variance to be accounted for is positional change. The analysis showed significant and systematic effects of variables that, on theoretical grounds, are expected to influence positional change. Consistent with previous studies by Farley (1964) and Guest (1974; 1978), we found that population growth strongly affected change of relative standing in the level of education ($\beta = .296$). Growth had a lesser effect on the percentages of males in upper white-collar occupations ($\beta = .167$) and still less of an

Conclusions

An empirical examination of the three different approaches to the study of suburban change and persistence lends support to each of them. Positional change, change of dispersion and change of the mean are all important components. Simultaneous measurement of all three components yields a more complete description of intertemporal differences than can be provided by any one perspective alone.

Apparent inconsistencies between different theories of suburban development as well as discrepancies between empirical findings and theory can be resolved by separately measuring the three distinct dimensions of change. All models require persistence, for the suburban region is after all a system with a structure and with strong patterns of functional interdependence between its component parts. Some models lead us to expect positional change in status under the influence of population growth and other factors. The aggregate effect of such changes is appropriately measured by the positional change coefficient, and the determinants of positional change may be investigated by multiple regression. Other models, including the concentric zone model under certain assumptions, predict a gradual change in the mean of an SES characteristic over time. Still others may lead us to expect a decrease or increase of the range of differences between suburbs. The consequences for change in each of the three dimensions should be explicitly stated for each theoretical model, and each change hypothesis should be tested with the use of the appropriate change measure.

Mainly because of a lack of comparable data, previous analyses of positional change in suburban SES have looked at only one SES characteristic, namely, education. Here, we have examined change and persistence of three indicators of

effect on median family income ($\beta = .086$). Our interpretation is that the newcomers to rapidly growing suburbs were high in education, but being young, had not yet worked their way to upper status occupations or higher incomes. Distance from the central city, age of housing and incorporation all had significant effects on positional change of one or more of the SES indicators.

SES: education, occupation and income. It is interesting that in spite of the high intercorrelations among these three variables in 1960 and again in 1970, there is a great deal of variation in patterns of change of these different aspects of socioeconomic status. Positional change was lowest for the occupational dimension and highest for the educational dimension. Structural changes in both mean and dispersion were highest for income and lowest for occupation. These differences alert us to the possibility that studies using only one indicator of SES may obtain different results depending on which SES variable is analyzed. Thus we propose that multiple indicators of SES should be employed where possible and that results obtained with only one indicator, such as education, should be interpreted with caution.

The standardized change measures developed here will facilitate comparisons not only between different indicators of a concept such as SES but also between regions or other groupings and between different time periods. They provide a way to summarize, for comparative purposes, very complex patterns of change within a region or other grouping. Yet they are easy to calculate, requiring only the before-after correlation of a variable, and its mean and standard deviation at the beginning and again at the end of the time interval under study.

It is our hope that the method will contribute to the clarification and more accurate testing of the theoretical models through which we seek to understand the workings of social systems.

REFERENCES

- Burgess, Ernest W.
1925 "The growth of the city." Pp. 47-62 in Robert E. Park, Ernest W. Burgess and Roderick D. McKenzie (ed.), *The City*. Chicago: University of Chicago Press.
- Duncan, Beverly
1964 "Variables in urban morphology." Pp. 17-30 in Ernest W. Burgess and Donald J. Bogue (eds.), *Contributions to Urban Sociology*. Chicago: University of Chicago Press.
- Duncan, Otis Dudley, Ray P. Cuzzort and Beverly Duncan
1961 *Statistical Geography*. Glencoe: Free Press.
- Farley, Reynolds
1964 "Suburban persistence." *American Sociological Review* 29:38-47.
- Feldman, Kenneth (ed.)
1972 *College and Student: Selected Readings in the Social Psychology of Higher Education*. New York: Pergamon.
- Feldman, Kenneth, and John Weiler
1976 "Changes in initial differences among major-field groups: an exploration of the 'accentuation effect.'" Pp. 373-407 in H. W. Sewell, R. M. Hauser and D. L. Featherman (eds.), *Schooling and Achievement in American Society*. New York: Academic Press.
- Guest, Avery M.
1974 "Neighborhood life cycles and social status." *Economic Geography* 50:228-43.
1978 "Suburban social status: persistence or evolution?" *American Sociological Review* 43:251-64.
- Hawley, Amos A.
1950 *Human Ecology*. New York: Ronald Press.
- Hoover, Edgar M. and Raymond Vernon
1962 *Anatomy of a Metropolis*. Garden City: Anchor Books.
- Logan, John R.
1976 "Industrialization and the stratification of cities in suburban regions." *American Journal of Sociology* 82:333-48.
1978 "Growth, politics, and the stratification of places." *American Journal of Sociology* 84:404-16.
- McClendon, McKee J.
1977 "Structural and exchange components of vertical mobility." *American Sociological Review* 42:56-73.
- Schnore, Leo F.
1972 *Class and Race in Cities and Suburbs*. Chicago: Markham.
- Taeuber, Karl F. and Alma F. Taeuber
1965 *Negroes in Cities*. Chicago: Aldine.

INCOME INEQUALITY: A CROSS-NATIONAL STUDY OF THE RELATIONSHIPS BETWEEN MNC-PENETRATION, DIMENSIONS OF THE POWER STRUCTURE AND INCOME DISTRIBUTION*

VOLKER BORNSCHIER AND THANH-HUYEN BALLMER-CAO

University of Zurich

American Sociological Review 1979, Vol. 44 (June):487-506

We see personal income inequality as a function of the distribution of power. In contrast to most of the previous research in this field three dimensions of power distribution within countries are explicitly taken into account: the organizational power distribution, the distribution of power in the labor market, and the "steering power" of the state. Going beyond previous formulations of a power theory of income inequality, we take explicitly into account the embracing system of the world economy. The specific focus is on the institution of the multinational corporation (MNC) which forms an all-embracing structure linking countries in a differential manner to the world economy. The concepts of MNC-headquarter status and MNC-penetration are introduced. With respect to the latter, we test the hypothesis that the extent of MNC-penetration affects power distribution which in turn results in a more unequal pattern of income distribution. Empirical analysis is based on multiple regression and pathanalysis. Although no empirical evidence is found to support the complementary hypothesis, i.e., that MNC-headquarter status leads to greater income equality, the hypothesis with regard to MNC-penetration does receive empirical support. Significant positive effects of MNC-penetration on income inequality are demonstrated via its relationship to all three dimensions of the power distribution. Directions for further research are suggested.

INTRODUCTION

Income inequality long has been thought to be an important aspect of social inequality. Several attempts at an empirical cross-national explanation of income inequality have been presented in this journal in recent years (Cutright, 1967; Jackman, 1974; Chase-Dunn, 1975; Robinson, 1976; Hewitt, 1977; Robinson

and Quinlan, 1977). The propositions as well as the empirical results clearly have stimulated a growing interest in this field. One has to point, however, to a limitation of this literature. Most of this research which is cross-national in design has put only political variables at the center of the analysis. An approach is needed which simultaneously takes into account social, economic and political determinants of personal income inequality.

The basic argument is that the distribution of economic rewards (measured by the size distribution of personal income) is largely a function of the distribution of power. This starting point is the same as that of Lenski (1966). More specifically, Bornschier (1978) suggests that one distinguish three analytical dimensions of power distribution: (1) the aggregate organizational power distribution, (2) the distribution of power in markets, and (3) the power distribution of "steering" located in the political and cultural system.

These dimensions cannot be attached exclusively to specific social actors. Concrete social actors (such as governments, trade unions, multinational corporations

* Address all communications to: Volker Bornschier; University of Zurich; Sociological Institute; Zeltweg 63, CH-8032; Zurich, Switzerland.

We would like to acknowledge the financial support of the Deutsche Gesellschaft fuer Friedens-und Konfliktforschung (DGFK), Bonn-Bad Godesberg, F. R. of Germany. This funding (AZ. 13-02 Bo 2/1-75) relates to the research project, "Multinational Corporations, Economic Policies and National Development," directed by Volker Bornschier and Peter Heintz at the Sociological Institute of the University of Zurich.

We would also like to thank Christopher Chase-Dunn, Christopher Hewitt, Peter Meyer-Fehr, Richard Robinson, Philippe Schmitter and an anonymous reviewer for their helpful comments on drafts. We alone are responsible for those errors and omissions which remain.

The paper was read at the general conference of the European Association of Development Research Institutes (E.A.D.I.), Milan, 1978.

and so on) are affected and affect all three dimensions of power distribution. Furthermore, in extension of Lenski (1966), politically organized and territorially limited societies (countries) are part of the world capitalist society. Within the power structure of world society, countries occupy, of course, very different structural positions (Heintz, 1969; 1974; Galtung, 1971; Chase-Dunn, 1975; Robinson, 1976; Bornschier, 1976; 1978; and several others).

Research is needed, therefore, to relate dimensions of the power structure of world society to dimensions of internal power distribution in order to explain personal income distribution within countries. We are concerned with the *world economy* based on the spatial division of labor as an important power system of the world. *Multinational corporations* (MNCs) are today the dominant actors within that world economy. This obtains not only for production, but also for the distribution of goods and services since an important and growing part of international trade is channelled by MNCs, thus by-passing the market completely. It is important to keep in mind, therefore, that the institution of the multinational corporation covers various dimensions of economic dependency in the world economy, namely, with regard to capital, technology, organization, international financial flows and foreign trade. Consequently, measures of capital penetration by MNCs have been found to be related to technological dependence as well as to various measures of foreign trade dependence (Meyer-Fehr, 1978; 1979).

A particularly strategic aspect relating individual countries to the structure of the world economy is whether a country takes part in the steering of that economy by being an important headquarter country for MNCs (only about a dozen countries belong to this category), or whether a country is merely penetrated by MNCs and therefore asymmetrically subjected to the forces of the world economy. This is the case with varying degrees of penetration for nine out of ten countries in the contemporary world.

We propose, then, as a basic hypothesis, that the institution of the multina-

tional corporation is an important factor for the distribution of income between and *within* countries. This impact is due to uneven development both between and within economic sectors in the course of MNC-penetration and due to changes in the power structure of the penetrated country which result from the intra-organizational division of labor within MNCs. The tasks and functions of decision making are located mainly in the headquarter country, whereas more standardized and routinized tasks are located in the penetrated countries (for more details, see Bornschier, 1976). There exists, of course, income concentration prior to MNC-penetration. The process of superimposed stratification (*Ueberschichtung*) which is the present day result of the spread of MNCs often is rooted historically in colonial subordination. Previously existing inequalities between and within countries are dynamically reproduced in the course of the performance of the system of MNCs. A point in case is the operation of industrial MNCs in the domestic markets of poor countries. This depends on a sufficient prior concentration of income in order to make these markets attractive, i.e., the existence of sufficient *effective* demand for MNC products which are highly standardized worldwide.

Our hypothesis is that MNCs—besides often relying on previous income concentration—contribute, *ceteris paribus*, to further increasing income inequality by affecting the power distribution. Here clearly arises a problem of causal inference since we have no time series for income inequality. With the help of path analysis we nevertheless try to make preliminary causal analyses by testing whether: level of MNC-penetration → degree of inequality in personal income distribution. This test design should not, of course, be interpreted as excluding causal connections running in the direction opposite to that sketched above. Furthermore, we want to remind the reader that our path analysis is based on covariations and is therefore only suggestive. The question whether MNC-penetration *increases*, *ceteris paribus*, income inequality thus requires further tests with time series.

The Two Topics of the Empirical Analysis

Cross-national analyses concerning the empirical relationship between MNC-penetration (or foreign capital penetration in general) and income inequality so far presented in the literature (Chase-Dunn, 1975; Bornschier, 1975; 1978; Robinson, 1976; Bornschier and Ballmer, 1978; Bornschier et al., 1978) do not take into account the *two* different dimensions of being related to the world economy through MNCs. Namely, they do not take into account whether the unit is penetrated by MNCs (subsequently denoted as PEN), or whether it is a headquarter country (denoted as HQS). Therefore, evidence is compiled on the degree to which these measures have inverse and/or symmetrical effects.

Secondly, previously cited evidence concerning the relation between MNC-penetration and income inequality leaves open the empirical issue of the specific mechanisms by which the relation comes into being. In the theoretical framework of Bornschier (1978), a number of hypotheses has been developed based on three analytical dimensions of power distribution. Several of these hypotheses will be tested. The logic of the model can be graphically represented as follows: MNC-penetration → power distribution → income inequality. Our method of empirical demonstration is that the statistically measured direct effect of MNC-penetration on personal income inequality is reduced to null once intervening variables are introduced into the regression equation.

EFFECTS OF MNC-PENETRATION AND HEADQUARTER STATUS

We look at the results in Table 1 to seek an answer to the first empirical question, i.e., whether MNC-penetration and headquarter status have inverse and/or symmetrical effects. For this purpose a sample of 50 countries has been used. The sample size is determined by the availability of data on the various intervening variables which are of main interest.¹

¹ In the sample of 50 countries various data for *intervening* variables have been estimated (see notes and Appendixes). This has been done to keep

The five indicators for our dependent variable, i.e., personal income inequality, are: the Gini index, which provides an indication of the degree of overall income inequality (Gini); the share of the upper income class in total income, i.e., the share of the top 5% of income receivers (T5); the share of the upper-middle income class, i.e., the fifth quintile (Q5); the share of the middle income class, i.e., the fourth quintile (Q4); and the share of the lower income class in total income, i.e., the combined first, second and third quintile (Q1-3).²

The time of the income surveys varies for the countries. The median year is 1968. As far as possible, the time-period for the measurement of the predictor variables has been matched exactly to the time-period for the measurement of income inequality (see notes).

In Table 1 the results of multiple regression analysis are presented. The regressions relate the degree of MNC-penetration (PEN, measured as the total stock of foreign direct investment in relation to total energy consumption and population)³ and the level of headquarter

the sample constant across the various analyses without losing too much information by listwise deletion. The crucial relationships for a test of our hypotheses, however, are also checked by bivariate correlations with pair-wise deletion of estimated data. The results are reported in the correlation matrix in the Appendixes. They show that the relations are rather similar (in some cases even stronger) if one excludes the estimates. Note that the sample of 50 countries does not include five centrally planned socialist countries for which no sufficient data on intervening variables are available (this does not apply to Yugoslavia, a socialist market economy). All the data employed in the analyses will be included in a data compendium (Ballmer and Scheidegger, n.d.).

² The data have been described in Bornschier (1978). Income refers to income before taxes and is from all sources. The income unit is the household; there are, however, several exceptions, i.e., the tax-paying unit, the income receiver or the individual. The main source for the data is the World Bank compilation of data on personal income distribution (Jain, 1975). This was supplemented by various other sources.

³ The concept for the operationalization is to relate the total stock of foreign direct investment (KFDI) to the total stock of capital (K) of the penetrated country. This ratio has to be corrected for the large differences in capital intensity across countries at different levels of economic development. This has been done by multiplying the ratio with the ratio of

⁵ The data for the logged income per capita ($\log Y_n$) relate to 1965 and are in constant market prices and U.S. \$ of 1964. The source is I.B.R.D. (World Bank), 1971. The level of average surplus is understood in terms of Lenski's (1966) usage.

proved by a high headquarter status; whereas MNC-penetration does increase income inequality.

Furthermore, a function of the level of income per capita is significantly related to income inequality. It is a curvilinear relation. At a low level of surplus, income inequality on the average is lower than at a medium level of surplus; whereas at the high levels of surplus, income inequality is again comparatively low. For a further theoretical and empirical analysis of this curvilinearity see Bornschieer (1978) and Ahluwalia (1976).

The absence of a significant negative relationship between headquarter status and income inequality is only a first result of a preliminary test of the complementary hypothesis suggesting symmetrical effects. The relationship between MNC-penetration and income inequality substantiates the previous findings cited above. It should be noted that the correlation in the largest possible sample of 72 countries (Bornschieer, 1978:34) is considerably stronger (PEN/Gini: $r=.47$) than in the present sample of 50 countries (PEN/Gini: $r=.30$).⁶

We have measured MNC-penetration by foreign capital dependency because within our theoretical perspective we also are interested in organizational aspects stemming from the direct involvement of foreign actors within dependent countries. The effect of PEN as shown in Table 1 remains also significant if foreign trade dependency is controlled for.⁷ We like to

point out, however, that both aspects of dependency are linked theoretically by the fact of the institution of the multinational corporation within the world economy as mentioned before.

EFFECTS OF MNC-PENETRATION ON PERSONAL INCOME INEQUALITY

In this section empirical explanations of the effects of MNC-penetration on personal income inequality are explored. We follow the research design outlined above by looking at the following theoretically relevant intervening variables: (1) the organizational power distribution, (2) the power distribution on the labor market, (3) the extent and the nature of the "steering power" (Steuerungsmacht) of the state.

(1): Organizational Power Distribution

We examine for the effect of the following parameters of the global organizational power distribution at the level of each national unit: (1) the extent of hierarchization of control; (2) the shape of the distribution of the labor force across the various hierarchical levels; and (3) the extent

1965 according to the procedure proposed by Gal-tung (1971: 102; trade composition index). Note that VERT is scaled in such a way that high values indicate a favorable position with regard to vertical trade. PEN 1967 and VERT 1965 are correlated ($r = -.43$, $N = 49$). Regressions of Gini on:

	HQS	PEN
N=49	-.05 (0.32)	.23 ^a (1.77)
N=35, LDCs only	-.05 (0.30)	.37** (2.06)
VERT 1965	f(Yn)	R ²
-.27*	.35**	.36**
(1.82)	(2.19)	(2.80)
-.38**	.07	.37**
(2.10)	(0.46)	(2.45)

This result shows that our indicator of MNC-penetration, representing also aspects of foreign trade dependency, is not statistically reduced to insignificance in its effects on income inequality by controlling foreign trade dependency as measured by VERT. Since we are interested in a more comprehensive analysis of the MNC-impact we do not control in the following for foreign trade dependency, which we see partly as one aspect of MNC-penetration.

⁶ The relationship is considerably stronger for underdeveloped countries within the 50 cases, i.e., PEN/Gini: $r = .50$ for 35 cases. This may be attributed: (1) to the fact that for various highly developed countries the effect might be compensated for by a high MNC-headquarter status; (2) to the organizational process of superimposed stratification which is assumed to be more pronounced in underdeveloped countries; and (3) to the possibility that a high and increasing income inequality is a prerequisite as well as a sociopolitical consequence especially in underdeveloped countries (see also below: steering power of the state). In addition, one may point to the finding of Chase-Dunn (1975) that foreign capital penetration goes together with high sectoral income inequality which seems to not apply to developed countries (Bornschieer, n.d.).

⁷ The foreign trade dependency measure we control for is the index of verticle trade (VERT, measuring the trade composition with regard to manufactured goods and raw materials). It is computed for

to which power is shared with expertise.⁸ Theoretical analyses of these parameters, as well as propositions concerning their complex interplay in the course of organizational evolution, have been presented elsewhere (Bornschieer, 1977; 1978).

Here, the hypothesis that the institution of the multinational corporation affects the evolution of the organizational power distribution is examined. It is based on the following theoretical suppositions. Power sharing with expertise takes place mainly in the organizational context of the company headquarter staff. The subsidiaries of MNCs operating in the penetrated country are dependent and incomplete organizations with special "line" functions in the MNCs' internal division of labor. In general, standardized and routinized functions prevail in such subsidiary operations. This pattern affects the internal structure of dependent organizations and thus the distribution of the labor force, as well as the degree of inclusion of expertise. At the same time, however, the transplantation of large-scale subsidiaries contributes to the hierarchization of control and increases the heterogeneity in the total system of organizations with respect to size, capital intensity and regional distribution of plants within the penetrated country. The specific hypotheses are that the higher the MNC-penetration, the higher the hierarchization of control and the higher the heterogeneity within the total organizational system and, hence, the less the trend towards bureaucratization and the lower the power sharing with expertise. The overall consequence is a disparity in the development of structural parameters of the aggregate organizational structure.

The latter two parameters have been operationalized. It is proposed that power sharing with expertise (PSE, measured as

the number of experts per hundred executives and owners outside agriculture)⁹ as well as the trend towards bureaucratization (BUR, measured as the number of clerical workers as percent of the labor force outside agriculture)¹⁰ increases the share of the middle and lower income class (bottom four quintiles) at the expense of the income share of the upper income class. Through this process the whole income inequality (Gini) is reduced.

The two organizational power variables measuring the power sharing with expertise and the bureaucratization (PSE, BUR) are positively related ($r=.56$). Both show a very strong correlation with the logged level of income per capita, $\log Y_n$ ($r=.73$ and $r=.76$). These correlations support the theoretical view (see Bornschieer, 1977) that the parameters of the aggregate organizational power structure are closely related to labor productivity which corresponds to income per capita. This theoretically expected high correlation poses, however, severe problems of multicollinearity in regression analysis. Highly interrelated independent variables mean that the relative impor-

⁹ The data for the operationalization of PSE (power sharing with expertise) is taken from the Yearbook of Labour Statistics (ILO, various years). PSE is equal to the square root of salaried professional, technical and related workers/employers and workers on own account outside agriculture + salaried administrative and managerial workers). The square root is used to correct the fact that experts, as their relative number increases, are increasingly hierarchically organized. The indicator has been time matched. In several cases, however, this has not been completely possible. In addition, for four countries only data on *total* professional workers are available; in these cases adjustments have been made to estimate the salaried only (the method was to take four-fifths of the total). For one country very early information has been extrapolated and the data for one country is estimated on the basis of information for other countries in the region with similar labor productivity (see Appendixes).

¹⁰ The aim of the operationalization is to measure the relative importance of clerical workers (without managers and experts). The source is the same as for power sharing with expertise. BUR is equal to the ratio of the clerical and related workers (without sales personnel) to the total labor force outside agriculture. This is again time matched, though not completely due to lack of suitable data for some countries. Data for the same two countries as in the case of PSE have been estimated using the same procedure.

⁸ Power sharing with expertise as a theoretical concept does not necessarily imply on the level of concrete roles that power is shared in a strict legal sense. Experts often are coopted into power (into an important but nevertheless subordinate position). But also in this frequent case it is implied that power holders have to pass over some benefits from power. For example, capital as a basis of power (right to command) can be cumulated to a great extent, but knowledge is, in general, necessarily more dispersed among a wider group (cf. Bornschieer, 1978).

tance indicated by the partial regression estimate is unreliable. Therefore, we have to exclude either the level of average surplus ($\log Y_n$) or both measures of organizational power distribution (PSE and BUR) from the regression.

Since we think that the relation between the level of economic development and income inequality is theoretically less promising than the relations with organizational power variables which have a more specific content, we exclude $\log Y_n$ from the regression.¹¹ There is, in addition, also a technical argument for the preference for PSE and BUR. If the correlation between independent variables is high as compared with their correlation with the dependent variable, the partial regression estimates may be poorer indicators of their relative importance than the zero-order correlation coefficient. Since both measures of organizational power distribution are more highly correlated with income inequality than $\log Y_n$ (see Appendixes) the preference for PSE and BUR is, therefore, also justified on statistical grounds.

The two organizational power distribution variables pertain to the nonagricultural segment of the society. Therefore we have to introduce an indicator of a basic structural feature of the *agricultural system* which is of great relative importance for a majority of countries. We use the concept of the degree of concentration of traditional economic power (TEP)¹² and

operationalize it in terms of the concentration of ownership of arable land. Such concentrated traditional economic power can be assumed to be fused often with export oriented interests linked to the world market (Kaztman, 1972; Heintz, 1969). This form of ties of traditional local elites with the world economy seems to be conducive to MNC-penetration. The correlation between land concentration and MNC-penetration (TEP/PEN: $r = .46$)¹³ suggests this.

The regression results in Table 2 show clearly significant relations between the indicators of organizational power distribution (BUR, PSE) and measures of income inequality which move in the hypothesized direction. The greater the trend towards bureaucratization, the lower is overall income inequality and the less unequal are the shares of income classes. However, power sharing with expertise, on the one hand, reduces significantly only the share of the top income class (T5) and, on the other hand, increases significantly the share of the middle class in total income (Q4). The share of the lower class as well as total inequality are not affected by this change in the power distribution.

Furthermore, the measure indicating the concentration of traditional economic power (TEP) also is related to income inequality. This is significant for three out of five measures of income inequality. Finally, Table 2 reveals a very important finding within the logic of our research design. Once variables of the organizational power distribution and of the traditional economic power are introduced along with MNC-penetration into the regression of personal income inequality, the *direct* effect of MNC-penetration is substantially reduced (in the case of

¹¹ If one neglects the problem of multicollinearity and introduces a function of logged income per capita into the regressions of Table 2, the direction and the pattern of associations of BUR and PSE with income inequality hold (see also Bornschie, 1978, for 54 cases). The magnitude and significance of the partial regression estimates for our 50 cases are reduced however. Also, the significance of the total regression is lower.

¹² The indicator is based on the Gini index of land distribution given by Taylor and Hudson (1972) (we used, in addition, the first edition of this handbook). The data relate mainly to ca. 1960. Since data for several countries have been estimated by using qualitative information, the interval scale has been reduced to an ordinal scale (Gini below .445:1, from .446 - .520:2, from .521 - .595:3, . . ., from .896 - .970:8). This simplified scale makes possible a relatively unproblematic assignment of scores to countries with no information in the basic source (namely, in the case of 11 countries out of 50). The assignment

of ranks is based on qualitative information mainly taken from Nohlen and Nüscheler (1976).

¹³ This does not apply, however, to foreign investment in agriculture itself (TEP/PEN in agriculture: $r = -.03$, $N = 35$ LDCs). Correlation results thus suggest that strong landed elites seem to prevent foreign investment in agriculture, but favor it in extraction (TEP/PEN in extraction: $r = .32$, $N = 35$ LDCs) and especially in manufacturing (TEP/PEN in manufacturing: $r = .46$, $N = 35$ LDCs). Data for penetration in sectors are from Bornschie and Ballmer (1978).

Table 2. Income Inequality Measures Regressed on Organizational Variables (PSE, BUR), Land Concentration (TEP) and MNC-Penetration (PEN) (N=50)

Predictors	Gini	T5	Q5	Q4	Q1-3
PSE	-.11	-.30**	-.16	.35**	.06
(t)	(0.76)	(2.06)	(1.23)	(2.59)	(0.42)
BUR	-.49**	-.35**	-.52**	.38**	.52**
(t)	(3.53)	(2.55)	(4.05)	(2.88)	(3.75)
TEP	.32**	.23*	.32**	-.21*	-.34**
(t)	(2.42)	(1.70)	(2.31)	(1.68)	(2.50)
PEN	.13	.16	.10	-.06	-.10
(t)	(1.04)	(1.32)	(0.86)	(0.54)	(0.83)
R ²	.42**	.42**	.50**	.47**	.41**
(t)	(3.15)	(3.13)	(3.64)	(3.43)	(3.09)

Note: for notes see Table 1.

Gini the beta is now .13 as compared with the clearly significant beta of .34 in Table 1).

We suggest the following causal interpretation of our statistical results: (a) MNC-penetration acts via a stabilization of traditional power on the distribution of income; (b) MNC-penetration retards the evolution of organizational parameters. Since the production thus takes place in the framework of a more unequal organizational power distribution, the income distribution is consequently more unequal. We provide more detailed evidence with the help of path analysis (Figure 1). In the path diagram the organizational variables (PSE and BUR) are taken as endogenous variables. PSE as well as BUR are strongly related to the level of surplus or labor productivity ($\log Y_n$). This is seen as a snap shot in a self-sustained process. An increase in the division of labor increases labor productivity and average surplus. The higher productivity in turn provides the resources (in manpower as well as capital) which make possible a progressive increase in the division of labor, including, of course, an increase in capital intensity.

Between MNC-penetration (PEN) and the organizational power distribution variables (PSE and BUR) clearly significant negative paths can be observed.¹⁴

¹⁴ The path coefficients to the organizational variables have been estimated including the variable TREND. The results are not given for reasons of easy presentation. TREND represents the time-point of measurement. Since both PSE and BUR as well as PEN have been time matched to the measurement of income inequality and since there is a general increase in these variables over time, TREND controls

The static path analysis thus lends some support to the dynamic hypothesis that MNC-penetration acts on income distribution via a retardation in the organizational evolution.

(2): *Power Distribution in the Labor Market*

We hypothesize that the power structure in the labor market is a determinant of income distribution. We consider three concepts as a basic characterization: bargaining power of labor in wage and labor conflicts (BPL), supply pressure on the labor market caused by demographic changes (SPD), supply pressure on the labor market caused by technological changes, net of demographic changes (SPT).

The bargaining power of labor is assumed to be the central feature of the labor market. We assume that it helps to explain differences in income inequality. For such an international comparison one should not rely on the frequency of strikes. Repression, on the one hand, and highly institutionalized wage bargaining on the other, make the frequency of strikes a rather doubtful cross-societal indicator of the bargaining strength of labor. Also the degree of unionization does not seem to be comparable due to the low equivalence of trade union systems. For example, in trade unions dominated by the state where membership is compulsory, the degree of unionization is not a meaningful indicator for the strength of labor.

for the disturbing factors due to the different points in time. The control variable TREND is not related, however, to income inequality.

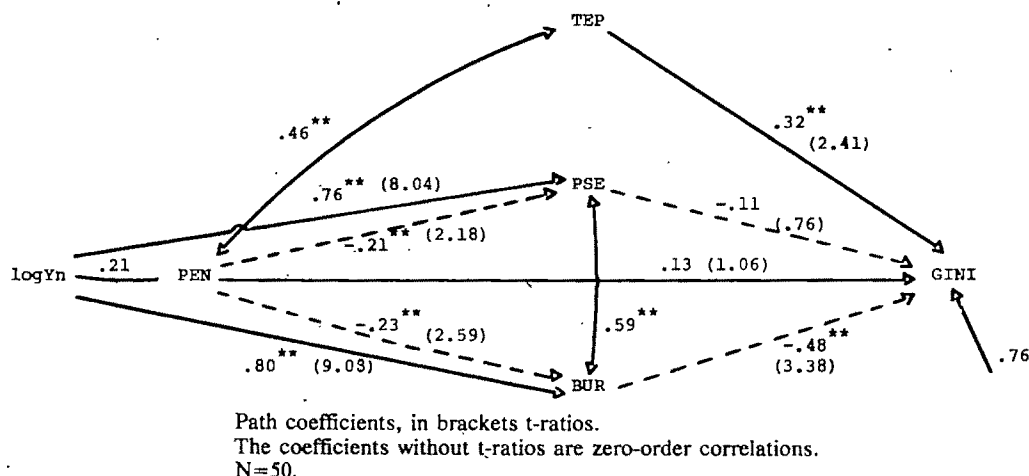


Figure 1. Path Diagram to Table 2

Finally, the number of persons involved in strikes or the number of working days lost due to strikes are not very significant either, because such measures are heavily influenced by the frequency of wage conflicts, depending on the degree of institutionalization, rationality or suppression. We suggest an indicator of the bargaining power of labor (BPL) which does not imply or, at least, partly overcomes the above mentioned shortcomings. The indicator BPL is operationalized as the total participation of workers per strike, averaged over a five-year period which has been time matched to the measurement of income inequality.¹⁵ In the case of rare strikes, this indicator, nevertheless, grasps the phenomenon of "warning" strikes which are intended to signal labor's strength despite general repression

or despite a high institutionalization of conflict regulation. This indicator also captures the aspect of concerted action on labor's side in wage disputes. Labor organizations which are fractionalized and thus do not act jointly cannot attain a high general level of threatening power as measured by BPL, even if the laborers of some plants or some of the unions go on strike frequently.

We propose that high bargaining power of labor is reflected, *ceteris paribus*, in lower income inequality. MNC-penetration is supposed to weaken the bargaining power of labor. This is due to a complex of socioeconomic and sociopolitical factors. (1) Given their organizational, superimposed stratification (Ueber-schichtung), MNCs favor an increasing fractionalization of labor. Their strategy of relative wage and fringe benefit privileges demonstrated by their paying in general higher wages than the going rate (cf. Bornschie, 1976; 1978, and the references there), strongly contributes to the creation of labor aristocracies which are unfavorable to the concerted action of labor. (2) MNCs, due to their assumed relative power position within the sociopolitical system, can be supposed to exert influence on governments by which the political and/or legal framework of wage conflicts is altered. This can, but does not necessarily go so far as to involve a prohibition of trade unions and/or

¹⁵ The source is the Yearbook of Labour Statistics (various years). BPL has been transformed to an ordinal scale (ranging from 0.5 to 10) to allow a less problematic assignment of scores to those countries where estimates have to be made on the basis of qualitative information (11 out of 50 cases). The main sources for this additional information are: Leminsky and Otto (1975), country reports on the trade union system by the Forschungsinstitut der Friedrich-Ebert-Stiftung (FR of Germany), and, among others, *Le Monde Diplomatique*. In the case of Yugoslavia the lowest possible value on the ordinal scale has been assumed. We tested also an alternative indicator, i.e., workers striking as a proportion of potential strikers. The results are similar, but not so strong.

strikes. However, one also can point to another argument, i.e., that MNCs often might be rather reluctant to invest considerably in those countries where labor's position is strong. This could also act in the direction of a negative covariation between MNC-penetration and labor's strength.

We control for two aspects of the supply pressure on the labor market. The demographic pressure (SPD) is measured as the growth rate of the labor forces between 1960–1975.¹⁶ This growth of the labor force is often likely to affect negatively the bargaining power of labor. Therefore, it should affect income inequality indirectly.

The supply pressure caused by technological change (SPT) is a possible result of capital intensification. This does not necessarily mean that a substitution of labor by machines will result in a factual or visible surplus of labor. This is only the case if capital equipment per working place (capital intensity) grows at a faster rate than the total stock of capital. We propose to measure the indicator SPT in terms of the difference between the growth rate of capital intensity and the growth rate of the capital stock between 1967–1973, net of demographic changes.¹⁷ SPT thus indicates a tendency towards structural underemployment which is not the result of a relative shortage of labor. MNCs utilize, in general, capital intensive production in developed as well as in underdeveloped countries. Given the abundance of labor in most underdeveloped countries, MNCs, thus, contribute to increasing the structural surplus of labor. The hypothesis is that MNC-penetration is associated with an increase in the technological supply pressure on the labor market (SPT). As SPT measures

only a tendency towards structural underemployment, the direct relation with income inequality is not likely to be observable. However, SPT presumably eventually affects the income distribution indirectly by weakening labor's position in wage conflicts. Even if structural upward mobility chances are relatively high (increase in bureaucratization and power sharing with expertise) the technological supply pressure on the labor market is nevertheless likely to affect labor's position. An orientation or illusion of upward mobility may weaken class solidarity. On the other hand, a feedback from the strength of labor is likely. High bargaining power may favor the substitution of labor by machines.

In Table 3 the three variables characterizing the labor market (BPL, SPD, SPT) are introduced, together with MNC-penetration, into the regressions. A function of the logged level of income per capita (average surplus), i.e., $f(Y_n)$, is introduced, in addition, as in Table 1, since there exists no substantial collinearity with the variables of the labor market. The bargaining power of labor, our central variable of the labor market, shows a clearly significant relationship with each of the five income inequality measures in Table 3. The hypothesis thus is supported: The higher the strength of labor, as measured by BPL, the lower the income inequality. We do not want to exclude, however, the opposite causal interpretation which also makes sense. If one takes income inequality as an indication of the power structure, then one could argue on the basis of the result that the likelihood of labor's conflict articulation is higher, the lower the power concentration. This possible two-way causation obviously needs further research with time series analysis.

The other variables of the labor market, those indicating demographical and technological supply pressure (SPD and SPT), do not show any direct relationship with income inequality. The logged level of income per capita again shows a curvilinear relation with income inequality (as in Table 1).

Finally, once variables characterizing the labor market are introduced together

¹⁶ The growth rate is the quotient (1975/1960). The source of the data is the Yearbook of Labour Statistics (ILO), and ILO (1977).

¹⁷ The capital stock for 1967 and 1973 is computed according to Meyer-Fehr (1978) and Borschier (n.d.). Capital intensity is the total capital stock divided by total labor force. Since the difference between the growth rate of capital intensity and capital stock shows a close negative relationship with the demographic pressure variable (SPD), we measure the technological supply pressure (SPT) *net*, i.e., by the residuals from the linear regression on SPD.

Table 3. Income Inequality Measures Regressed on Labor Market Characteristics (BPL, SPT, SPD), MNC-Penetration (PEN), When a Function of the Level of Average Surplus ($f(Y_n)$) Is Controlled for ($N=50$)

Predictors	Gini	T5	Q5	Q4	Q1-3
BPL	-.32**	-.30**	-.32**	.26**	.31**
(t)	(2.62)	(2.55)	(2.73)	(2.21)	(2.42)
SPT	.04	-.04	.04	.03	-.07
(t)	(0.29)	(0.33)	(0.34)	(0.24)	(0.52)
SPD	.02	.06	.00	.02	-.01
(t)	(0.16)	(0.47)	(0.03)	(0.12)	(0.09)
PEN	.21	.22*	.20	-.18	-.19
(t)	(1.58)	(1.76)	(1.60)	(1.39)	(1.39)
$f(Y_n)$	.45**	.47**	.53**	.58**	.45**
(t)	(3.42)	(3.75)	(4.17)	(4.49)	(3.27)
R^2	.40**	.45**	.46**	.45**	.36**
(t)	(2.73)	(3.02)	(3.04)	(3.00)	(2.53)

Note: for notes see Table 1.

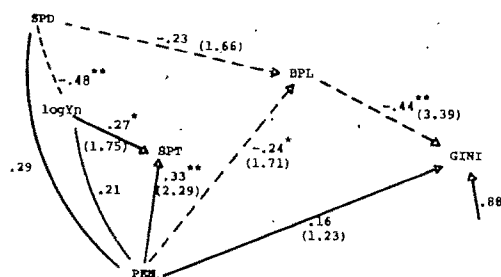
with MNC-penetration into the regressions, the *direct* effect of MNC-penetration is considerably reduced (the beta in the case of Gini as dependent variable is now .21 and not significant any more; as compared with .34 in Table 1 which was clearly significant). This is the same change as in the case of the organizational variables. Therefore, evidence suggests that MNC-penetration affects power distribution in the labor market. We can provide more detailed evidence with the help of path analysis.

The path diagram to Table 3 (Figure 2) shows a significant negative path from MNC-penetration (PEN) to labor's strength (BPL). This is consistent with the hypothesis. One should remark, however, that the empirical evidence based on covariations does not rule out the argument that labor's strength may keep MNC-penetration relatively low. The path from MNC-penetration (PEN) to the ten-

dency for structural underemployment (SPT) is positive as hypothesized and clearly significant. But though the path from SPT (technological supply pressure) to labor's strength (BPL) is negative as expected, it is clearly not significant, beta = -.06 (not included in the diagram). As expected, demographic pressure (SPD) negatively affects labor's position (BPL). The path coefficient just fails to be significant.

(3): Steering Power (*Steuerungsmacht*) of the State

We are concerned here with an empirical evaluation of general prerequisites and basic aspects of the steering power of the state which is a potential source of income redistribution (Cutright, 1967; Jackman, 1974; Robinson, 1976; Robinson and Quinlan, 1977; Hewitt, 1977). We suggest that two dimensions are important: (1) the material scope of the steering power of the state, and (2) the character of state intervention into the economy. For the first aspect we consider government revenues as a percentage of gross domestic income (GVR).¹⁸ For the second aspect we consider two variables:¹⁹ (i) the share of pub-



Path coefficients, in brackets t-ratios. The coefficients without t-ratios are zero-order correlations.

N=50.

Figure 2. Path Diagram to Table 3.

¹⁸ The source of the data is I.B.R.D. (World Bank), 1976. The data for "1967" are the average of 1965 and 1970.

¹⁹ The variable social insurance program experience (Jackman, 1974; Robinson, 1976) has been tested, too. But it was excluded from the reported analyses because of its rather high collinearity with government revenue ($r = .76$).

Table 4. Income Inequality Measures Regressed on State Characteristics (GVR, PIV, GIT) and on MNC-Penetration (PEN) (N=50)

Predictors	Gini	T5	Q5	Q4	Q1-3
GVR	-.49**	-.60**	-.57**	.68**	.46**
(t)	(3.73)	(5.05)	(4.57)	(5.85)	(3.39)
PIV	-.03	-.04	.03	-.15	.02
(t)	(0.22)	(0.29)	(0.22)	(1.11)	(0.16)
GIT	.09	.04	.07	-.01	-.09
(t)	(0.59)	(0.26)	(0.49)	(0.10)	(0.57)
PEN	.33**	.31**	.32**	-.27**	-.31**
(t)	(2.67)	(2.69)	(2.66)	(2.40)	(2.36)
R ²	.30**	.42**	.37**	.45**	.26**
(t)	(2.52)	(3.14)	(2.87)	(3.34)	(2.30)

Note: for notes see Table 1.

lic investment in total investment (PIV)²⁰, and (ii) the extent of government's general intervention in the economy which includes the incidence of nationalization policy (GIT).²¹ In this section we shall neither consider all aspects of the state's role for income distribution nor shall we consider the determination of the state's action by the character of the distribution of private power (see Robinson and Quinlan, 1977; Bornschier, 1978).

With respect to the steering power of the state, we shall examine first the relationship between the above introduced variables and income inequality. For regression analysis again the problem of multicollinearity arises (see above in the context of organizational power distribution variables). Government revenue (GVR) and logged level of income per capita (log Yn) are highly correlated ($r=.75$). We argue in the same way as in the case of the organizational variables and exclude the function of the logged income from the regression.²²

The regression results in Table 4 show that only one of the new variables, i.e., government revenue (GVR) as a measure of the redistributive *potential* of the state, is clearly related to more income equality. The results for the measures of the involvement of the state in the economy (PIV, GIT) are not significant. Finally, if variables of the state are introduced together with MNC-penetration into the regression, the partial regression coefficients for MNC-penetration are not reduced substantially and remain significant (in the case of Gini the beta of PEN changes little; it is now .33 as compared with .34 in Table 1).

The path analysis relating to Table 4 will not be presented in detail. We would like to mention only that the path from MNC-penetration (PEN) to government revenue (GVR), net of the logged level of income per capita (average surplus), is negative. However, it is of little empirical weight and is insignificant (beta: $-.15$, $t=1.54$). This is consistent with the hypothesis that MNCs are not primarily and unconditionally interested in a low level of government revenue. A case in point is the industrial production in developed as well as underdeveloped countries. This involves considerable costs for infrastructure and for other measures which provide or improve the preconditions for MNC-penetration. Therefore, in general, it is not likely that MNCs try to keep public expenditures low.

If government revenue is an important variable for the redistributive *potential* of the state and if this potential, *on the average*, seems to promote a more equal in-

²⁰ The source is I.B.R.D. (World Bank), 1971. The data refer to 1967 with several minor time deviations reported in the source. A few estimates made by Berweger and Hoby (1978) have been included.

²¹ The indicator GIT is taken from Berweger and Hoby (1978) and refers to 1965. The indicator was constructed by Berweger and Hoby with a content analysis of information provided by Business International.

²² If the problem of collinearity is neglected and a function of logged income per capita is introduced along with GVR into the regressions of Table 4, the direction and pattern of association of GVR with income inequality remain the same. The magnitude and the significance are, however, reduced. Also the significance of the total regression is then lower.

come distribution (also without taking explicitly into account political power distribution), then the question arises whether high MNC-penetration affects the use of the state's financial resources. The hypothesis can be put forward that, driven by self-interest, MNCs try to influence the pattern of purposes as well as the pattern of priorities of state expenditures. Since the concrete policies of the state are dependent on the power constellation of social actors (including the interest of state actors itself), the effective realization of the interests of MNCs depends on changes in the power constellation within both the system of parties as well as administrative action. More precisely, the argument is that MNCs use direct and indirect political pressure (legal as well as illegal, e.g., bribery) to bring about a pattern of purposes and a pattern of priorities of government expenditures which favors them. Indeed, their demand for infrastructure, which is necessary for their type of capital intensive production, cuts down the resources which would be potentially available for a redistribution of income to poorer regions and to poorer segments of the population. But MNCs probably do not only block possible redistributions indirectly by cutting down what is available for such purposes. They also are vitally opposed to any redistributive policy that withdraws money from those who are actually or potentially their customers; in other words, any policy which transfers money to poorer segments of the population. Such poorer segments of the population, under the condition of low average income and high income inequality, still are not able to provide an *effective* demand in the markets dominated by MNCs. From the point of view of MNCs, this money would trickle off and they would lose sales. And apart from this argument within the logic of the market, MNCs are opposed because any extensive redistribution of income is feared as a threat to the stability of the dominant sociopolitical coalition which they support and by which they are also supported.

Therefore, we propose that under a condition of high MNC-penetration government resources are likely not to have an income equalizing effect. Rather, the

purposes as well as the pattern of priorities of public expenditures are likely to increase income inequality. With respect to this hypothesis, however, we propose to introduce a restricting marginal condition, namely, scarcity of resources, i.e., a low level of surplus. In a situation of relative abundance MNCs might not resist a policy of redistribution favoring the poor, because (1) the high level of surplus makes it possible that their specific demands for public expenditures leave enough resources for redistribution, and (2) a redistribution to lower income classes under this condition is not likely to cut down but to increase the effective demand on markets which MNCs dominate (a Keynesian argument, cf. Bornschier and Ballmer, 1978: 39-44).

In order to present some preliminary evidence for the hypothesis we turn to the analysis of covariance in Table 5. Table 5 includes regressions of three measures of income inequality (T5, Q4, Q1-3) on government revenue (GVR), MNC-penetration (PEN) and a dummy variable indicating scarcity of resources (SR-Dummy).²³ With equations 1.2, 2.2 and 3.2 the hypothesis is tested in its unconditioned form. This is done by introducing the interaction term: government revenue under the condition of high MNC-penetration (GVR times PEN-Dummy).²⁴ The interaction terms in this set of equations are not significant. Thus the hypothesis is not supported.

The equations 1.3, 2.3 and 3.3 test the same hypothesis in its conditioned form, i.e., scarcity of resources. The interaction term now takes the values of GVR only if PEN is high *and* if resources are scarce (GVR times PEN-Dummy times SR-Dummy) (see fn. 23). Whereas the basic effect of government revenue (GVR) is related to *less* income inequality, the interaction of government revenue with high MNC-penetration and scarcity of re-

²³ The dummy variable for scarcity of resources (SR-Dummy) takes the value one for all low income countries and the value zero for the other, i.e., U.S., Canada, northern and western Europe (plus Italy), Japan, New Zealand and Australia.

²⁴ PEN-Dummy takes the value one for MNC-penetration values above the mean, otherwise it takes the value zero.

Table 5. Government Revenues Affecting Income Inequality; An Analysis of Covariance (N=50)

Dependent variables; equations	Predictors			GVR times		
	GVR	PEN	GVR times	PEN-D times	SR-D	\bar{R}^2
			PEN-D	SR-D		
1.1 T5:	-.38(2.25)**	.28(2.56)**			.26(1.56)	.44(3.72)
1.2 T5:	-.37(2.19)**	.47(2.40)**	-.23(1.18)		.23(1.37)	.45(3.29)
1.3 T5:	-.46(2.77)**	.01(0.06)		.41(2.26)**	.06(0.33)	.49(3.55)
2.1 Q4:	.39(2.41)**	-.21(2.03)**			-.33(2.02)**	.49(4.10)
2.2 Q4:	.38(2.36)**	-.41(2.21)**	.24(1.31)		-.29(1.81)*	.50(3.64)
2.3 Q4:	.41(2.49)**	-.12(0.75)		-.12(0.68)	-.27(1.43)	.49(3.54)
3.1 Q1-3:	.22(1.17)	-.28(2.36)**			-.30(1.58)	.30(2.85)
3.2 Q1-3:	.21(1.11)	-.48(2.21)**	.24(1.10)		-.27(1.40)	.31(2.54)
3.3 Q1-3:	.29(1.57)	-.01(0.08)		-.39(1.88)*	-.11(0.51)	.34(2.70)

Note: for notes see Table 1.

sources is related to *more* inequality. This is clearly significant for the share of the upper income class in total income (T5) and significant for the share of the lower class in total income (Q1-3). The results with Gini and Q5 as inequality measures (not included in the table) are very similar to those for T5 and also clearly significant.

These results lend some preliminary support to the conditioned hypothesis that MNCs act in poor countries on income inequality by stabilizing and by contributing to a specific dominant political power constellation. Through this power constellation the state in such countries seems not only to be prevented from adopting a policy of redistribution of income to the poorer segments of the population, but seems also to contribute to higher income inequality. This is the assumed consequence of a policy of expenditures which follows a pattern of items and priorities favorable for the dominant political constellation of which MNCs are part.

SUMMARY MODEL AND DISCUSSION

In the summary model we have put together those variables from the previous analyses which had a clearly significant impact on the comparative income distribution. MNC-penetration itself is not included because the direct effect is very small once the variables measuring power distribution are incorporated. We have reintroduced, of course, MNC-penetration in the final summary path diagram since it is regarded as a primary, antecedent causal agent of the whole process. From the analysis of the state variables, we take government revenue as percent of total income (GVR) as a mea-

sure of the redistributive potential of the state. And from the analysis of the power distribution on the labor market, the bargaining power of labor (BPL) emerged as the most significant. In the case of organizational power distribution, two variables are clearly significant: (1) the distributional change of the labor force towards bureaucratization (BUR) and (2) the power sharing with expertise (PSE). In the case of PSE, however, the collinearity with government revenues is rather high ($r=.73$). Therefore, we do not introduce them both into the same regression. The correlation of BUR with GVR is only $r=.56$. We use, therefore, BUR as a residual factor characterizing organizational power distribution. Finally, we include the concentration of the traditional economic power (TEP).

These four intervening variables, i.e., intervening between MNC-penetration and income inequality, represent important macroaspects of the modern organizational system, the organization of agriculture, the labor market and the state. The results in Table 6 show that each of these four final variables is related to the five measures of income inequality. Out of the 20 coefficients estimated in the regression only three fail to be clearly significant. Of these three measures, two are moderately significant and only one is insignificant.

The trend towards bureaucratization is particularly strongly related to a higher share of the lower income class (bottom three quintiles) to a lower share of the top quintile and to lower overall inequality. Traditional economic power is especially related to a higher share of the top 20%, to a lower share of the lower class and to

Table 6. Summary Regressions of Income Inequality Measures (N=50)

Predictors	Gini	T5	Q5	Q4	Q1-3
BUR	-.34**	-.21*	-.38**	.27**	.38**
(t)	(2.71)	(1.75)	(3.30)	(2.30)	(2.95)
TEP	.33**	.28**	.33**	-.25**	-.33**
(t)	(3.22)	(2.84)	(3.54)	(2.58)	(3.12)
BPL	-.29**	-.29**	-.27**	.21**	.26**
(t)	(2.71)	(2.82)	(2.77)	(2.08)	(2.41)
GVR	-.22*	-.40**	-.27**	.44**	.17
(t)	(1.83)	(3.40)	(2.50)	(3.82)	(1.39)
\bar{R}^2	.52**	.55**	.60**	.57**	.49**
(t)	(3.77)	(4.00)	(4.43)	(4.16)	(3.57)

Note: for notes see Table 1.

higher overall inequality. The bargaining power of labor equally affects four measures in the direction of less inequality. Only its association with a higher share of the middle class (fourth quintile) is somewhat lower. The share of government in total income is particularly strongly related to a higher share for the middle class (Q4) and to a lower share for the upper income class (T5). The other measures of income inequality are less affected. This pattern also is reported in Rubinson (1976) and Rubinson and Quinlan (1977).

Despite these differences in the relative beta weights of the predictors for the five measures of personal income inequality, the overall importance of the four final predictors is fairly similar. The average of the beta weights across the five measures is about .30/, ranging from the bargaining power of labor, .26/, to bureaucratization, .32/. The total variance explained in income inequality (\bar{R}^2) is about 55% and ranges from 49% with regard to the share of the bottom three quintiles to 60% with regard to the share of the top 20% of income receivers.

The results of our analysis can be compared only partly with findings in the literature because similar research is lacking. The results with respect to the organizational power distribution are the same as in Bornschier (1978), although there a more complex model was tested. But since we have used the same indicators for the organizational power distribution, the same methodology and only a somewhat different sample, this similarity in the results should not be astonishing. A similar argument applies to government revenues which has been used by Rubinson (1976) who reports very similar results with respect to government revenue.

One should note that the rather strong effect of government revenues, as an indicator of redistribution *potential*, can be demonstrated without identifying the political power constellation. We hypothesize that this is due to the likelihood that, in the global range of variation, a higher share of government in total income is associated with a more equal political power distribution. In fact, there are rather high positive correlations between government revenues and various indicators of "democratic performance" used by Cutright (1967), Jackman (1974), Rubinson and Quinlan (1977), Hewitt (1977), Zwicky (1978), and Ballmer (n.d.). On the other hand, the analysis suggests indirect evidence that the state's control over resources is not necessarily related to lower income inequality. The contrary also could be established through an analysis of covariance. This, we have argued, is related to the interaction effect of high MNC-penetration and scarcity of resources with government revenues. In this case, we have postulated an intervening change in the political power constellation.

We come finally to the concluding evidence for our general hypothesis that MNC-penetration causes a change in the power distribution which is, in turn, related to a more unequal income distribution.

The path diagram to Table 6²⁵ (Figure 3) demonstrates that a very large part of the direct effect of MNC-penetration on personal income inequality is mediated by the

²⁵ Some variables, i.e., SPD, SPT, TREND (for the latter, cf. fn. 14), which have been used for the estimation of path coefficients are not given in the diagram for reasons of easy presentation.

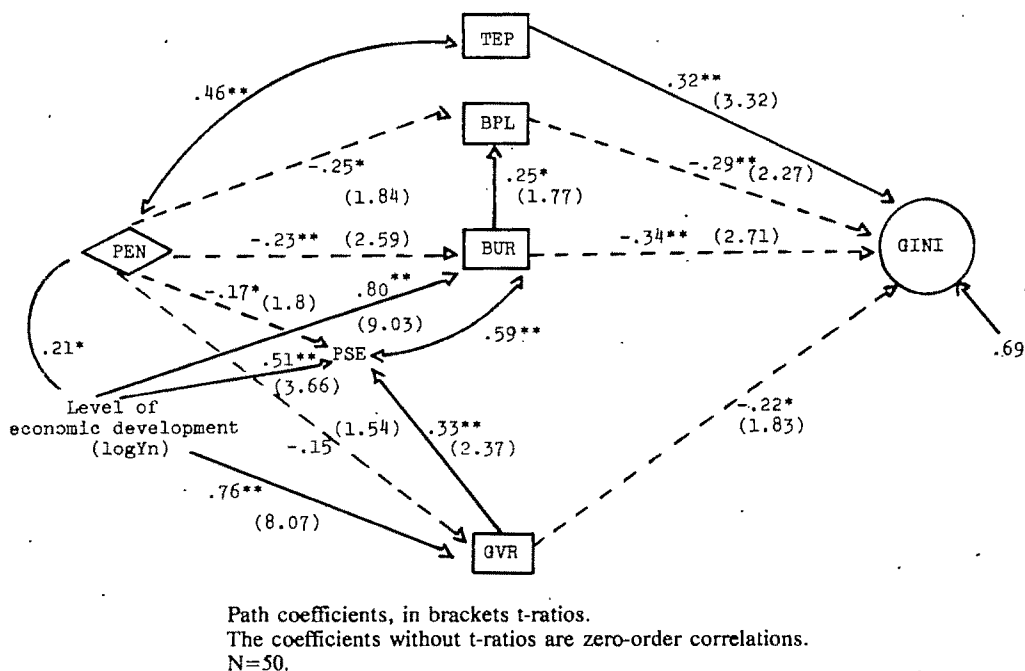


Figure 3. Path Diagram to Table 6

four variables included in the final model. For example the direct path from PEN to Gini has a beta weight of only .09 as compared with .34 in Table 1. MNC-penetration affects negatively the bargaining power of labor (BPL), the distributional change of the labor force towards bureaucratization (BUR) as well as power sharing with expertise (PSE). The latter has not been included in Table 6 because of collinearity. But its effect on some income inequality measures is substantial (cf. Table 2). Whereas these three paths are significant, the negative path from MNC-penetration to government revenue (GVR) is not significant. One could conclude that MNC-penetration primarily affects the state's role for income distribution by changing patterns of expenditure. We would like to point to the relationship between MNC-penetration and concentration of traditional economic power (TEP) which could provide an important hint to one of the socioeconomic and sociopolitical structures prevailing in many countries in which the position of the MNCs is strong (see also above and fn. 13).

We can conclude, then, that the empirical evidence of our research lends pre-

liminary support to the proposition that MNCs are not only likely to perpetuate an unequal power distribution in the agricultural sector, but they are also likely to contribute to a more unequal power distribution in the nonagricultural sector. From the findings of our research, the clearly significant relationship which statistically exists between levels of MNC-penetration and levels of personal income inequality is given a causal explanation.

We feel, however, the need for further research which would deepen and extend the analysis of the suggested transformations in the socioeconomic and in the sociopolitical structures under conditions of high MNC-penetration. Furthermore, an analysis of the theoretically assumed two-way causation between MNC-penetration and income inequality needs time series or, at least, a two-stage least square or an indirect least square estimation procedure. The same applies to the causal interpretation we propose with regard to intervening variables.

Further research also is needed with respect to the finding that the effect of MNC-penetration seems to be stronger for

underdeveloped countries (cf. fn. 6 and Table 5). In addition, the relationship between regional and sectoral inequalities within countries as well as the pattern of spatial location of MNCs should be investigated in future research. Finally, evidence does not support the proposition

that headquarter countries have a more equal income distribution than would be predicted from their level of average surplus. Further research with regard to this complementary hypothesis is necessary.

APPENDIX I
SAMPLE OF COUNTRIES

Country	Year*	Gini	Notes**	Country	Year*	Gini	Notes**
Ghana	68	39.07	(3)	Indonesia	71	44.38	(1)(3)
Ivory Coast	70	52.42	(1)(2)(3)	Japan	71	41.25	
Sierra Leone	68	56.72	(3)	Korea	71	36.09	
Egypt	64-65	42.74	(4)	Malaysia	70	50.57	(1)
Morocco	65	50.80	(3)	Pakistan	70-71	33.43	
Canada	69	38.28	(3)	Philippines	71	48.40	
United States	72	40.90		Sri Lanka	73	35.36	
Costa Rica	71	43.96	(4)	Thailand	62	50.29	
El Salvador	65	53.87		Austria	67	36.93	(4)
Honduras	67-68	60.20		Denmark	66	36.43	
Jamaica	58	56.14		Finland	67	46.33	
Mexico	69	56.80		France	70	42.14	(3)
Panama	69	48.81		Germany FR	70	39.18	(4)
Argentina	61	43.34		Greece	57	39.37	(3)
Brazil	70	57.60	(1)(4)	Italy	69	39.67	
Chile	68	49.49		Netherlands	67	39.25	
Colombia	70	54.35	(4)	Norway	70	36.09	
Ecuador	68-70	53.00	(4)	Spain	64-65	39.07	
Peru	70-71	57.75		Sweden	72	34.95	
Uruguay	67	42.11	(4)	Switzerland	68	40.09	(3)
Venezuela	71	60.05		United Kingdom	73	34.61	
Lebanon	55-60	52.53	(3)(4)	Yugoslavia	68	34.79	(4)
Turkey	68	55.27	(1)	Australia	67-68	31.98	
Hong Kong	71	42.49	(3)(5)	New Zealand	71-72	35.30	
India	67-68	46.97		Taiwan	72	29.08	(1)(2)(4)

* Year of the income distribution survey.

** Estimations of intervening variables (see notes). For PEN as well as income inequality, of course, no estimations were made.

(1) PSE estimated;

(2) BUR estimated;

(3) TEP estimated;

(4) BPL estimated;

(5) GVR estimated.

APPENDIX 2
ZERO-ORDER CORRELATION MATRIX

N = ... N = 50	Gini	T5	Q5	Q4	Q1-3	log Y _n	HQS	PEN	PSE (N=44) ^a	BUR (N=48) ^a	TEP (N=39) ^a	BPL (N=39) ^a	SPD	SPT	GVR	GIT	PIV
Gini																	
T5	.90								-.47	-.51	.45	-.49					
Q5	.98	.90							-.54	-.50	.46	-.49					
Q4	-.71	-.80							-.55	-.58	.46	-.50					
Q1-3	-.99	-.85	-.97						.61	.57	-.43	.43					
logY _n	-.39	-.45	-.46	.66					.46	.52	-.44	.47					
HQS	-.39	-.41	-.43	.43	.37				.71	.78	.06	.12					
PEN	.30	.29	.27	-.19	.39	.61			.64	.53	-.20	-.11					
PSE	-.46	-.55	-.53	.62	.44	.73	.12		-.02	.01	.59	-.37					
BUR	-.53	-.51	-.59	.57	.54	.76	.65	-.02	-.02	.55	-.38	.02					
TEP	.38	.35	.38	-.31	-.37	.14	.52	-.04	.56	—	-.04	.23					
BPL	-.50	-.49	-.50	.43	.47	.13	-.13	.46	-.25	.06	—	-.16					
SPD	.37	.44	.39	-.39	.47	-.48	-.06	-.31	0	.31	-.17	—					
SPT	-.04	-.13	-.07	.17	.01	.44	-.33	.29	-.35	-.32	.15	-.30	—				
GVR	-.50	-.60	-.57	.65	.47	.75	.30	.33	.34	.23	.42	-.07	-.24	—			
GIT	.17	.15	.21	-.25	-.17	-.37	.57	.05	.73	.56	-.09	.21	-.58	.31	—		
PIV	-.15	-.18	-.10	0	.14	-.26	-.33	-.14	-.22	-.34	.02	-.12	.03	-.11	-.30	—	
							-.07	-.32	.07	-.19	-.24	-.12	-.04	-.14	.09	.47	
(x100)																	
Mean	44.6	24.3	51.0	20.7	28.3	2.7	0.6	52.6	7.1	10.8	4.7	3.8	1.3	-.003	23.0	24.3	33.3
S.d.	8.4	7.6	8.3	2.8	6.2	0.5	1.4	32.3	3.2	4.4	2.0	2.4	0.2	.03	9.3	8.0	14.7

^a Without estimations.

REFERENCES

- Ahluwalia, Montek S.
1976 "Inequality, poverty and development." *Journal of Development Economics* 3:307-42.
- Ballmer-Cao, Thanh-Huyen
n.d. "Système politique, répartition des revenus et pénétration des entreprises multinationales." (Under review in *Annuaire Suisse de Science Politique*.)
- Ballmer-Cao, Thanh-Huyen, and Jürg Scheidegger
Forth- "Compendium of data for world-system com- analyses: a sourcebook of data based on the ing study of MNCs, economic policy and national development." In Volker Bornschieer and Peter Heintz (eds.), special issue of the *Bulletin of the Sociological Institute of the University of Zurich*.
- Berweger, Gottfried, and Jean-Pierre Hoby
1978 "Wirtschaftspolitik gegenüber Auslandskapital." *Bulletin of the Sociological Institute of the University of Zurich* 35:1-136.
- Bornschieer, Volker
1975 "Abhängige Industrialisierung und Einkommensentwicklung." *Schweizerische Zeitschrift fuer Soziologie* 1:67-105.
1976 Wachstum, Konzentration und Multinationalisierung von Industrieunternehmen. Frauenfeld and Stuttgart: Huber.
1977 "Arbeitsteilung und soziale Ungleichheit." *Koelner Zeitschrift fuer Soziologie und Sozialpsychologie* 29:438-60.
1978 "Einkommensungleichheit innerhalb von Ländern in komparativer Sicht." *Schweizerische Zeitschrift fuer Soziologie* 4:3-45.
n.d. "Multinational corporations and economic growth: a cross-national test of decapitalization thesis." (Under review in *Journal of Development Economics*.)
- Bornschieer, Volker, and Thanh-Huyen Ballmer-Cao
1978 "Multinational corporations in the world economy and national development: an empirical study of income per capita growth, 1960-1975." *Bulletin of the Sociological Institute of the University of Zurich* 32:1-169.
- Bornschieer, Volker, Christopher Chase-Dunn, and Richard Robinson
1978 "Cross-national evidence of the effects of foreign investment and aid on economic growth and inequality: a survey of findings and a reanalysis." *American Journal of Sociology* 84:651-83.
- Chase-Dunn, Christopher
1975 "The effects of international economic dependence on development and inequality." *American Sociological Review* 40:720-38.
- Cutright, Philipps
1967 "Inequality: a cross-national analysis." *American Sociological Review* 32:562-78.
- Galtung, Johan
1971 "A structural theory of imperialism." *Journal of Peace Research* 8:81-117.
- Hewitt, Christopher
1977 "The effect of political democracy and social democracy on inequality in industrial societies." *American Sociological Review* 42:450-64.
- Heintz, Peter
1969 Ein soziologisches Paradigma der Entwicklung mit besonderer Berücksichtigung Lateinamerikas. Stuttgart: Enke.
Heintz, Peter, in collaboration with Suzanne Heintz
1974 Die Zukunft der Entwicklung. Vienna: Huber, English edition 1973.
- I.B.R.D. (World Bank)
1971 World Tables. Mimeo.
1976 World Tables. Baltimore: Johns Hopkins Press.
- IMF (International Monetary Fund)
1973- Balance of Payments Yearbook. Various
1975 years.
- ILO (International Labour Office)
1966- Yearbook of Labor Statistics. Various
1977 years.
1977 Labour Force Estimates and Projections. Geneva.
- Jackman, Robert
1974 "Political democracy and social equality: a comparative analysis." *American Sociological Review* 39:29-45.
- Jain, Shail
1975 Size Distribution of Income: A Compilation of Data. Washington, D.C.: World Bank.
- Katzman, Rubén D.
1972 "Dependency and the absorption of social tensions in Latin American nations." Pp. 262-76 in Peter Heintz (ed.), *A Macrosociological Theory of Societal Systems*, Vol. I. Vienna: Huber.
- Kommission der Europäischen Gemeinschaften
1976 Studie der multinationalen Unternehmen. Bd. I. Brüssel.
- Leminsky, Gerhard, and Bernd Otto (eds.)
1975 Gewerkschaften und Entwicklungspolitik. Koeln: Bund Verlag.
- Lenski, Gerhard E.
1966 Power and Privilege: A Theory of Social Stratification. New York: McGraw-Hill.
- Meyer-Fehr, Peter
1978 "Bestimmungsfaktoren des Wirtschaftswachstums von Nationen: Komparative empirische Analyse unter besonderer Berücksichtigung der Tätigkeit multinationaler Konzerne." *Bulletin of the Sociological Institute of the University of Zurich* 34:1-105.
1979 "Technologieabhängigkeit und Wirtschaftswachstum." (Under review in *Schweizerische Zeitschrift fuer Soziologie*.)
- Nohlen, Dieter, and Franz Nuscheler (eds.)
1976 Handbuch der Dritten Welt. Vols. 2 and 3. In press. Hamburg: Hoffman und Campe.
- O.E.C.D.-D.A.C.
1972 Stock of private direct investments by D.A.C. countries in developing countries, end 1967. Paris. Updatings for later years. Mimeo.

Rubinson, Richard

- 1976 "The world-economy and the distribution of income within states: a cross-national study." *American Sociological Review* 41:638-59.

Rubinson, Richard, and Dan Quinlan

- 1977 "Democracy and social inequality: a reanalysis." *American Sociological Review* 42:611-23.

Taylor, Charles L., and Michael C. Hudson

- 1972 *World Handbook of Political and Social Indicators*. 2nd ed. New Haven: Yale University Press.

Zwicky, Heinrich

- 1978 *Einkommensungleichheit und Legitimität*. Unpublished licentiatum philosophiae thesis, University of Zurich.

ITEMS (Continued)

■ REMI CLIGNET (The Variability of Paradigms in the Production of Culture) is Professor of Sociology at Northwestern University. In 1974 he authored *Liberty and Equality in the Educational Process* (Wiley). He is also author of *The Africanization of the Labor Markets* (University of California Press, 1976). He is now working on a study of the sociology of the Arts.

■ ANDREA TYREE (Gaps and Glissandos: Inequality, Economic Development and Social Mobility) is Associate Professor in the Department of Sociology at State University of New York, Stony Brook. Her research interests include comparative stratification and mobility, ascriptive determinants of socioeconomic achievement, and the demographic consequences of infanticide and its demise. MOSHE SEMYONOV is Visiting Haggard Assistant Professor in Sociology at the University of Nebraska-Lincoln. He is investigating the Israeli stratification system (with Andrea Tyree) and is also doing research on places as a dimension of social stratification. ROBERT W. HODGE is currently a Visiting Professor in the Department of Sociology at the University of Southern California. He is on leave from the State University of New York, Stony Brook. He is finishing a monograph on occupational prestige and is continuing the development of a dynamic, econometric model of postwar American society.

■ WILLIAM H. FREY (Central City White Flight) is a Project Director and Affiliate at the Center for Demography and Ecology, Department of Sociology, University of Wisconsin, Madison. His research is concerned with the migration and residential mobility dynamics of intrametropolitan population distribution. For the past three years he has been directing a comparative study of migration and city-suburb redistribution determinants in large metropolitan areas. He is writing a monograph which will report the findings of this study.

■ CLARK MCPHAIL (Mead vs. Blumer) is Associate Professor in the Department of Sociology, Uni-

versity of Illinois. He is conducting quasi-experimental studies of elementary forms of collective behavior. He also is investigating the application of computer-digitizing techniques in the analysis of film records of individual and collective behavior. He is completing a book on collective behavior that will be published by Prentice-Hall. CYNTHIA REX-ROAT is a Ph.D. Candidate in the Department of Sociology at the University of Illinois. She is completing a study of racial differences in wives' labor force participation.

■ PATRICIA A. TAYLOR (Income Inequality in the Federal Civilian Government) is Research Assistant Professor, on leave from Sweet Briar College, and currently at the University of Virginia. She is investigating schooling, training, and occupational change among career civil servants, 1963-1977. In 1978 she coauthored (with Ann Carmel) *A Profile of Hispanic Employment, 1974-1976* (U.S. Government Printing Office).

■ ANDREW COLLVER (Suburban Change and Persistence) is Associate Professor in the Department of Sociology, State University of New York, Stony Brook. His research focuses on studies of housing and community development in the Long Island region. MOSHE SEMYONOV is Visiting Haggard Assistant Professor in the Department of Sociology, University of Nebraska-Lincoln.

■ VOLKER BORNSCHIER (Income Inequality: A Cross-National Study) is Assistant Professor at the Sociological Institute of the University of Zurich. His research interests include world system analysis and social inequality. In 1976 he authored *Wachstum, Konzentration und Multinationalisierung von Industrieunternehmen* (Huber). THANH-HUYEN BALLMER-CAO is Research Fellow at the Sociological Institute of the University of Zurich. She is currently doing research on political participation and on protest and violence.



New from
Cornell...

Exiles of Erin

Irish Immigrants in Victorian London.

By LYNN HOLLEN LEES. The author deals here with the effects of urbanization on peasant migrants in a large and complex Victorian city. Making use of an unusual interdisciplinary approach combining historical demography, folklore, sociological literature, and traditional historical sources, she challenges many of Oscar Handlin's views on the effects of migration. *Illustrated.* \$16.50

The World of Aldus Manutius

*Business and Scholarship in
Renaissance Venice*

By MARTIN LOWRY. The book centers on Aldus Manutius (1450-1515), an important printer and man of letters - his background, his business practices, and his impact on the intellectual life of the times. The author maintains that Aldus was responsible for giving the printed text the academic and social respectability previously reserved for the manuscript. *Illustrated.* \$28.50

Malnutrition, Environment and Behavior

New Perspectives

Edited by DAVID A. LEVITSKY. It has been widely thought that malnutrition during the formative years will result in permanent brain damage. However, the exhaustive research presented here indicates that the key to understanding behavioral abnormalities lies in the interaction of nutrition and environment. This book, bringing together the work of thirty specialists, consists of papers presented at the Cornell Conference on Malnutrition and Behavior in 1975.

\$15.00

CORNELL UNIVERSITY PRESS
Ithaca, New York 14850

The American Sociologist

The American Sociologist contains major articles analyzing sociology as a profession and as a discipline. Included are papers on such professional concerns as the use of sociological knowledge and skills in academic and non-academic settings; the conditions of work and maintenance of professional standards; the ethical, practical, and intellectual issues related to research; practical problems affecting sociologists as professionals (e.g. taxes, publication, copyright); ideological issues related to the development of new perspectives.

ISSN 0003-1232

Recent issues have included articles on:

"Part-Timers and the Academic Labor
Market of the Eighties"

Toward Amateur Sociology: A Proposal for
the Profession

The CIA and the Professor: A Personal
Account

ASA members: \$8; Non-members: \$12

Institutions: \$16

Order from:

The American Sociological
Association
1722 N Street, NW
Washington, DC 20036

AMERICAN SOCIOLOGICAL REVIEW

THE COLLECTIVIST ORGANIZATION: AN ALTERNATIVE TO RATIONAL-BUREAUCRATIC MODELS*

JOYCE ROTHSCHILD-WHITT

Cornell University

American Sociological Review 1979, Vol. 44 (August):509-527

During the 1970s the U.S. has witnessed the emergence of a wide range of organizations that explicitly reject the norms of rational-bureaucracy and identify themselves as "alternative institutions" or "collectives." Grounded in an extensive study of the practices of worker collectives, this paper seeks to identify some of the structural commonalities which link these new work organizations and to develop a theoretical framework for understanding them. First, the ideal-type features of collectivist democracy are delineated and contrasted with the characteristic features of bureaucracy. The ideal-type approach allows us to assess these organizations not as failures to achieve bureaucratic standards they do not share, but as efforts to realize wholly different values. Second, constraints and social costs that inhibit the realization of organizational democracy are discussed. It is in the conceptualization of alternative forms of organization that organizational theory has been weakest, and it is here that the experimentation of collectives may broaden our understanding.

This article represents a first approach to a model of collectivist organization, a model that is premised on the logic of substantive rationality rather than formal rationality. To date, theories of organizational action have assumed, explicitly or implicitly, that norms of formal rationality prevail (Thompson, 1967). Indeed, in a modern society they almost always do. This decade, however, has given rise to a wide array of work organizations that self-consciously reject the norms of rational-bureaucracy and identify them-

selves as "alternative institutions." The emergence of these contrabureaucratic organizations calls for a new model of organization that can encompass their alternative practices and aspirations.

Max Weber delineated four types of social action: traditional, affectual, instrumentally rational, and value rational. The first three forms of social action correspond respectively to traditional, charismatic, and legal-rational bases of authority, with each type of authority implying a particular type of organization to implement its aims. But the last type of social action, value-rationality, has no counterpart in his typology of authority and organization. Some recent scholars have begun to look to Weber's missing type, value-rational authority, to understand certain kinds of professional and church organizations (Satow, 1975; Wood, 1978).

A value-rational orientation to social action is marked by a "belief in the value for its own sake . . . independent of its prospects of success" (Weber, 1968:24). It is evidenced by actions that put into practice people's convictions. For Weber (1968:37)

*Direct all communications to: Joyce Rothschild-Whitt; New York State School of Industrial and Labor Relations; Cornell University; P.O. Box 1000; Ithaca, NY 14853.

I would like to thank William Foote Whyte, J. Allen Whitt, Robert Stern, Charles Perrow, Carole Pateman, Rosabeth Kanter, Howard Aldrich and the anonymous reviewers of the ASR for valuable comments and suggestions on an earlier draft of this paper. In addition, I would like to acknowledge the support of the New Systems of Work and Participation Program at ILR, Cornell University (NIMH grant #MH 29259-03) during the completion of this work. A previous version of this paper was presented at the Ninth World Congress of Sociology in Uppsala, 1978.

natural law is one of the purest instances of value-rational legitimacy.

The tension between substantive or value-rational action on the one hand, and formal or instrumentally-rational action on the other, was well recognized by Max Weber. For Weber, formal rationality and its main locus of expression in bureaucracy would come to dominate modern society, but it would be continually "confronted by the inevitable conflict between an abstract formalism of legal certainty and [the] desire to realize substantive goals" (Weber, 1954:226). The modern legal order could not exclude a substantive theory of natural law any more than the modern bureaucracy could eliminate all moral values. In Weber's view, the conflict between formal and substantive justice has no ultimate solution (Bendix, 1962:391-438). Nevertheless, in his classic statement on bureaucracy, Weber (1946:196-244) sets forth the characteristics of this mode of organization as if it could eliminate all substantive, non-formal considerations, and contrasts this ideal-type conception of bureaucracy with patrimonial administration. The polar opposite of the monocratic, formal bureaucracy drawn by Weber would be a fully collectivized democracy which turned on principles of substantive rationality.

Just as the ideal of bureaucracy, in its monocratic pure type, is probably not attainable (Mouzelis, 1968); so the ideal of democracy, in its pure and complete form, is probably never achieved. In practice, organizations are hybrids.

This paper aims to develop an ideal-type model of collectivist-democratic organization. It is an attempt to delineate the form of authority and the corresponding mode of organization that follows from value-rational premises. As such it is grounded in observations of counter-bureaucratic organizations which aspire to being "collectives," or in Weberian terms, which have explicitly rejected instrumentally-rational social action in favor of value-rational behavior. The ideal-type approach allows us to understand these new forms of organization, not only in terms of bureaucratic standards they do not share, but in terms of the alternative values they do hold (cf. Kanter

and Zurcher, 1973). Further, the use of an ideal-type permits us to locate actual organizations along a continuum.

Constraints and social costs that inhibit the realization of organizational democracy will be addressed in the latter half of this paper.

Research Settings and Methods

During the 1970s the United States has witnessed an impressive proliferation of what have popularly come to be termed *alternative institutions*. Alternative institutions may be defined in terms of their members' resolve to build organizations which are parallel to, but outside of, established institutions and which fulfill social needs (for education, food, medical aid, etc.) without recourse to bureaucratic authority.

Parallel, oppositional organizations have been created in many service domains—e.g., free medical clinics, free schools, legal collectives, alternative media collectives, food cooperatives, research collectives, communes. Grassroots cooperative businesses are proliferating as well, especially in fields with relatively low capitalization needs such as restaurants, bookstores, clothing manufacture and retail, auto repair, housing construction, alternative energy installation, newspapers, and so forth. They are burgeoning at a remarkable rate. For instance, in 1967 there were about 30 free schools in the United States. By 1973 there were over 800 documented free schools (New Schools Exchange Directory, 1967; 1973). A 1976 directory locates some 5,000 alternative organizations nationwide, and does not even claim to be exhaustive (Gardner, 1976). These collectively owned and managed work enterprises represent one of the enduring legacies of the antiauthority movements of the 1960s.¹

¹ Gardner (1976) estimates that about 1,000 new alternative institutions are being created annually in the U. S. This is his best estimate, but the kind of evidence that would be needed to compute actual rates of creation and of dissolution is not yet available. However, the historical record is instructive. The nineteenth century and the first third of the twentieth century saw at least 700 cases of produc-

Little social scientific research has been devoted to this social development. Some research studies describe one or another of these alternative work organizations, but few point to commonalities which link them. This paper identifies some of the structural commonalities and attempts to develop a general organizational framework of collectivist-democracy in which specific cases may be understood.

The organizational properties formulated in this paper are grounded in comparative data from different types of collectivist organizations. Glaser and Strauss (1967) have argued that theory generated from data, namely, grounded theory, will have more power to predict and explain the subject at hand than will theory arrived at through speculation or logical deduction.

Following the comparative research strategy of Glaser and Strauss (1967), I selected for study five collectivist work organizations that were as varied as possible: a free medical clinic, a legal collective, a food cooperative, a free school, and an alternative newspaper.² All are located in a medium-sized city in California. Although they differ greatly as to the type of product or service they provide, organizational size, funding sources, technology utilized, and so forth, they are unified by the primacy each gives to developing a collectivist-democratic form of organization.

Participant observation was conducted in each of the research settings ranging in duration from six months to two years per

organization. Observational material was amplified by structured interviews with selected members of each of the organizations, with a mean interview time of 2-¼ hours. This was followed by questionnaire surveys to the membership of three of the organizations under study.

Each theoretical point in the paper is grounded in numerous instances from the empirical material. I have tried to select those few that seem most characteristic of the data. Of course, no number of illustrations can ever constitute a "proof." The theoretical formulations in this work should be assessed for their logical consistency, clarity, integration, and especially for the extent to which they are found to be generic properties of collectivist organizations.

The Collectivist Organization: Characteristics

Collectivist-democratic organizations can be distinguished from bureaucratic organizations along at least eight dimensions. Each of these characteristics will be taken up in turn, and a summarizing chart will follow.

Authority.

When we're talking about collectives, we're talking about an embryonic creation of a new society . . . Collectives are growing at a phenomenal rate all over this country. The new structures have outgrown the science of analyzing them. Sociology has to catch up with reality. . . . Collectivism is an attempt to supplant old structures of society with new and better structures. And what makes our's superior is that the basis of authority is radically different. (Staff member, Alternative Paper)

The words of this activist get right to the heart of the matter: authority. Perhaps more than anything else, it is the basis of authority that distinguishes the collectivist organization from any variant of bureaucracy. The collectivist-democratic organization rejects rational-bureaucratic justifications for authority. Here authority resides not in the individual, whether on the basis of incumbency in office or expertise, but in the collectivity as a whole.

This notion stems from the ancient anarchist ideal of "no authority." It is

ers' cooperatives (Aldrich and Stern, 1978). These were in many ways the forerunners of the contemporary wave of collectives and cooperatives discussed in this paper. Historically, cooperatives have come in distinct waves—the 1840s, the 1860s, the 1880s and the 1920s–1930s. Their longevity has varied widely between industries (Aldrich and Stern, 1978). Those of the nineteenth century had a median duration of less than ten years, while more than half of the worker cooperatives of the 1920s and 1930s (particularly in the plywood industry and in the refuse collection industry) are still in operation today (Jones, 1979). Since the current wave of collectives is largely a post-1970 phenomenon and is still on the rise, it is too early to say how long it will last.

² All persons and organizations have been given fictitious names in this paper. For a more detailed account of the research sites and methods see Rothschild-Whitt (1976; 1978).

premised on the belief that social order can be achieved without recourse to authority relations (Guerin, 1970). Thus it presupposes the capacity of individuals for self-disciplined, cooperative behavior. Indeed, collectivist organizations routinely emphasize these aspects of human beings. Like the anarchists, their aim is not the transference of power from one official to another, but the abolition of the pyramid in toto: organization without hierarchy.

An organization cannot be comprised of a collection of autonomous wills, each pursuing its own personal ends. Some decisions must be binding on the group.

Decisions become authoritative in collectivist organizations to the extent that they derive from a process in which all members have the right to full and equal participation. This democratic ideal, however, differs significantly from conceptions of "democratic bureaucracy" (Lipset et al., 1962), "representative bureaucracy" (Gouldner, 1954), or even representative democracy. In its directly democratic form, it does not subscribe to the established rules of order and protocol. It does not take formal motions and amendments, it does not usually take votes, majorities do not rule, and there is no two-party system. Instead there is a "consensus process" in which all members participate in the *collective* formulation of problems and *negotiation of decisions*.³ All major policy issues, such as hiring, firing, salaries, the division of labor, the distribution of surplus, and the shape of the final product or service, are decided by the collective as a whole. Only decisions which appear to carry the consensus of the group behind them, carry the weight of moral authority. Only these decisions, changing as they might with the ebb and flow of sentiments in the group, are taken as binding and legitimate. These organizations are collectively-controlled

by their members or workers: hence the name *collectivist* or *collectivist-democratic* organization.

In Weberian terms, we are concerned here with organizations which aspire and claim to be free of *Herrschaft*.⁴ They are organizations without domination in that ultimate authority is based in the collectivity as a whole, not in the individual. Individuals, of course, may be delegated carefully circumscribed areas of authority, but authority is delegated and defined by the collectivity and subject to recall by the collectivity.

Rules. Collectivist organizations also challenge the bureaucratic conception that organizations should be bound by a formally established, written system of rules and regulations. Instead, they seek to minimize rule use. But, just as the most bureaucratic of organizations cannot anticipate, and therefore cannot circumscribe, *every* potential behavior in the organization, so the alternative organization cannot reach the theoretical limit of *zero* rules. Collectivist organizations, however, drastically can reduce the number of spheres of organizational activity that are subject to explicit rule governance.

In the most simple of the collectivist organizations in this study, the free high school, only one explicit organizational rule was formulated: no dope in school. This rule was agreed upon by a plenary meeting of the school's students and staff primarily because its violation was perceived to threaten the continued existence

³ As organizations grow beyond a certain size they are likely to find purely consensual processes of decision making inadequate, and may turn to direct voting systems. Other complex, but nevertheless democratic, work organizations may sustain direct democracy at the shop floor level, while relying upon elected representative systems at higher levels of the organization (cf. Edelstein and Warner, 1976).

⁴ Actually, Weber did recognize the possibility of directly democratic organization, but he dealt with this only incidentally as a marginal type case (Weber, 1968:948-52; 289-92). Although Weber's three types of legitimate domination were meant to be comprehensive, both in time and in substance, as Mommsen (1974:72-94) points out, it is difficult to find an appropriate place for modern plebiscitarian democracy in Weber's scheme. Weber did come to advocate the "plebiscitarian leader-democracy," but this was a special version of charismatic domination (Mommsen, 1974:113). He did not support "democracies without leadership" (*fuererlose Demokratien*) which try to minimize the domination of the few over the many because organization without *Herrschaft* appeared utopian to him (Mommsen, 1974:87). Thus it is difficult to identify the acephalous organizations of this study with any of Weber's three types of authority.

of the school. Other possible rules also were discussed at the Free School, rules that might seem self-evident in ordinary schools such as "each student should take X number of classes" or "students are required to attend the courses for which they are registered," but these did not receive the consensual backing of the school's members.

In place of the fixed and universalistic rule use which is the trademark of bureaucracy, operations and decisions in alternative organizations tend to be conducted in an ad hoc manner. Decisions generally are settled as the case arises, and are suited to the peculiarities of the individual case. No written manual of rules and procedures exists in most collectives, though norms of participation clearly obtain. While there is little attempt to account for decisions in terms of literal rules, concerted efforts are made to account for decisions in terms of substantive ethics. This is like Weber's (1968:976-8) *Kadi* justice and far removed from the formal justice that informs rational-bureaucratic action.

One of the chief virtues of extensive rule use in bureaucracy is that it permits predictability and appeal of decisions. The lack of universalistic standards in prebureaucratic modes of organization invited arbitrary and capricious rule. In bureaucracy decisions could be calculated and appealed on the basis of their correspondence to the written law. In collectivist organizations, however, decisions are not necessarily arbitrary. They are based on substantive values (e.g., equality) applied consistently, if not universally. This permits at least some calculability on the basis of knowing the substantive ethic that will be invoked in a particular situation.

Social control. From a Weberian point of view, organizations are tools. They are instruments of power for those who head them. But what means does the bureaucracy have of ensuring that lower-level personnel, people who are quite distant from the centers of power, effectively will understand and implement the aims of those at the top? This issue of social control is critical in any bureaucracy. Perrow (1976) examines three types of social control mechanisms in bureaucracies: direct

supervision, standardized rules, and selection for homogeneity. The first type of control, direct supervision, is the most obvious. The second is far less obtrusive, but no less effective: standardized rules, procedures, and sanctions. Gouldner (1954) showed that rules can substitute for direct supervision. This allows the organization considerable decentralization of everyday decision making, and even the appearance of participation, for the *premises* of those decisions have been carefully controlled from the top. Decentralized decision making, when decisional premises are set from the top via standardized rules, may be functionally equivalent to centralized authority (cf. Blau, 1970; Bates, 1970; Perrow, 1976).

Collectivist organizations generally refuse to legitimate the use of centralized authority or standardized rules to achieve social control. Instead, they rely upon personalistic and moralistic appeals to provide the primary means of control, as Swidler (1979) demonstrates in her examination of free schools. In Etzioni's (1961) terms, compliance here is chiefly normative. One person appeals to another, "do X for me," "do X in the interest of equality," and so forth.

The more homogeneous the group, the more such appeals can hold sway. Thus, where personal and moral appeals are the chief means of social control, it is important, perhaps necessary, that the group select members who share their basic values and world view. All five of the alternative organizations in this study tried to do that. At the Law Collective, for instance, I asked how they decide whether to take in a new member:

They have to have a certain amount of past experience in political work . . . [,] something really good and significant that checks out Secondly, they have to share the same basic assumptions as far as politics goes and they have to be willing to accept the collective way of doing things

Such recruitment criteria are not at all uncommon or hidden in alternative work organizations.

In Perrow's (1976) terms alternative organizations eschew first- and second-level controls, but accept third-level controls. Third-level controls are the most

subtle and indirect of all: selection of personnel for homogeneity. On this level social control may be achieved by selecting for top managerial positions only people who "fit in"—people who read the right magazines, go to the right clubs, have the right style of life and world view. This is also true in collectivist organizations. Where people are expected to participate in major decisions (and this means *everyone* in a collective and high-level managers in a bureaucracy) consensus is crucial, and people who are likely to challenge basic assumptions are avoided. A person who reads the *Wall Street Journal* would be as suspect in applying for a position at the Law Collective, as a person who reads the *New Left Review* would be at ITT. Both kinds of organizations utilize selection for homogeneity as a mechanism for social control.

Social relations. Impersonality is a key feature of the bureaucratic model. Personal emotions are to be prevented from distorting rational judgements. Relationships between people are to be role-based, segmental, and instrumental. Collectivist organizations, on the other hand, strive toward the ideal of community. Relationships are to be wholistic, affective, and of value in themselves. The search for community may even become an instance of goal displacement, as when, for example, a free school comes to value community so highly that it loses its identity as a school and becomes a commune (see, e.g., Kaye, 1972).

Recruitment and advancement. Bureaucratic criteria for recruitment and advancement are resisted in the collectivist organization. Here employment is not based on specialized training or certification, nor on any universalistic standard of competence. Instead, staff are generally recruited and selected by collectives on the basis of friendship and social-political values. Personality attributes that are seen as congruent with the collectivist mode of organization, such as self-direction and collaborative styles, also may be consciously sought in new staff (see, e.g., Torbert, 1973).

Employment does not constitute the beginning of a career in collectivist organizations in the usual sense, for the collec-

tive does not provide a life-long ladder to ever-higher positions. Work may be volunteer or paid, and it may be part-time or full-time or even 60 hours per week, but it is not conceptualized as a career. Bureaucratic career advancement (based on seniority and/or achievement) is not a meaningful concept in collective work organizations, for there is no hierarchy of offices. Therefore, there can be no individual *advancement* in positional rank (though there may be much change in positions).

Collectivist work organizations generally recruit competent and skilled personnel even though their selection criteria explicitly emphasize friendship networks, political values, and personality traits. To illustrate, during the year in which the Free Clinic was observed, four full-time staff positions were filled, and between nine and 65 applications were received for each position. Yet each of the four positions went to a friend of present staff members. The relevant attributes cited most frequently by the staff making these decisions were: articulation skills, ability to organize and mobilize people, political values, self-direction, ability to work under pressure, friendship, commitment to the organization's goals, cooperative style, and relevant experience. These selection criteria are typical of alternative organizations. In spite of their studied neglect of *formal* criteria of competence (e.g., certification), alternative organizations often attract highly qualified people.⁵ In many ways, their selection criteria are well suited to their needs for multitasking and committed personnel who can serve a variety of administrative and task-oriented functions and who are capable of managing the organization in cooperation with others.

Incentive structure. Organizations use different kinds of incentives to motivate participation. Most bureaucratic workplaces emphasize remunerative incentives and few employees could be expected to donate their services if their paychecks

⁵ A dissertation conducted in the San Francisco area found that free school teachers there have higher degrees from more prestigious universities than their public school counterparts (McCauley, 1971:148).

were to stop. Collectivist organizations on the other hand, rely primarily on purposive incentives (value fulfillment), secondarily on solidary incentives such as friendship, and only tertiarily on material incentives (Clark and Wilson, 1961). According to Etzioni (1961), this kind of normative compliance system tends to generate a high level of moral commitment to organization. Specific structural mechanisms which produce and sustain organizational commitment are identified by Kanter (1972a). Because collectivist work organizations require a high level of commitment, they tend to utilize some of these mechanisms as well as value-purposive incentives to generate it. Indeed, work in collectives is construed as a labor of love, and members may pay themselves very low salaries and may expect each other to continue to work during months when the organization is too poor to afford their salaries.

Alternative organizations often appeal to symbolic values to motivate people to join and to participate actively. The range of these values is considerable. At the Free Clinic, for instance, a member describes motivation:

Our volunteers are do-gooders. . . . They get satisfaction from giving direct and immediate help to people in need. This is why they work here.

While at the Alternative Newspaper, the following is more illustrative:

Our motives were almost entirely political. We were moving away from a weathermen type position, toward the realization that the revolution will be a very gradual thing. . . . We wanted to create a base for a mass left. To activate liberals and open them up to left positions. To tell you the truth, the paper was conceived as a political organ.

At the Food Co-op it is the value of community that is most stressed, and the Co-op actively helps to create other community-owned and controlled institutions in its locale.

However, we should guard against an overly idealistic interpretation of participation in alternative organizations. In these organizations, as much as any, there exists an important *coalescence of material and ideal interests*. Even volunteers in

these organizations, whose motives on the face of it would appear to be wholly idealistic, also have material incentives for their participation.

For example, staff members at the Free Clinic suspect that some volunteers donate their time to the clinic "only to look good on their applications to medical school." Likewise, some of the college students who volunteered to teach at the Free School believed that in a tight market, this would improve their chances of getting a paid teaching job. And, for all the talk of community at the Food Co-op, many members undoubtedly joined simply because the food was cheaper. Because material gain is not part of the acceptable vocabulary of motives in these organizations, public discussion of such motives is suppressed.

Nonetheless, for staff members as well as for volunteers, material incentives coalesce with moral incentives. At the Law Collective, for instance, legal workers often used their experience there to pursue the bar, since California law allows eligibility for the bar through the alternative means of apprenticing under an attorney for three years. At the Alternative Newspaper, a few staff members confided that they had entered the paper to gain journalistic experience.

Yet members of alternative institutions often deny the existence of material considerations and accept only the idealistic motivations. In the opinion of one long-time staffer at the Alternative Paper:

I don't think anyone came for purely journalistic purposes, unless they're masochists. I mean it doesn't pay, the hours are lousy, and the people are weird. If you want professional journalistic experience you go to a straight paper.

In many ways, she is right: Alternative institutions generally provide woefully inadequate levels of remuneration by the standards of our society. But, it does not impugn the motives of participants to recognize that these organizations must provide some material base for their members if they are to be alternative places of employment at all.

At the Free Clinic full-time staff were all paid \$500 per month during 1974-1975, at the Law Collective they were paid a base

of \$250 per month plus a substantial supplement for dependents, and at the Alternative Paper they received between \$150 and \$300 per month, in accordance with individual "needs." These pay levels were negotiated in open discussion of the collectives as a whole, as were decisions regarding the entire labor process. If these wage levels appear exploitative, it is a case of self-exploitation. It is the subsistence wage levels which permit the young organization to accumulate capital and to reinvest this surplus in the organization rather than paying it out in wages. This facilitates the growth of the organization and hastens the day when it may be able to pay higher salaries.⁶

Many collectives have found ways to help compensate for the meager salaries they pay their members. The Law Collective stocked food so that members could eat at least a meal or two per day at the office for free. The collective also maintained a number of cars that its members could share, thereby eliminating the need for private automobile ownership. Free Clinic staff decided to allow themselves certain fringe benefits to compensate for what they regarded as underpaid work: two weeks of paid vacation time each year, plus two additional weeks of unpaid vacation (if desired); one day off every other week; and the revised expectation that staff would regularly work a 28-30 rather than 40-hour week. But these are compensations or supplements for a generally poor income, and like income, they do not motivate people to work in alternative organizations, they only make work there possible.

First and foremost, people come to work in an alternative organization because it offers them substantial control over their work. Collective control means

that members can structure both the product of their work and the work process in congruence with their ideals. Hence, the work is purposeful to them. It is not infrequently contrasted with alienating jobs that they have had, or imagine, in bureaucracies:

A straight paper would have spent a third of a million dollars getting to where we are now and still wouldn't be breaking even. We've gotten where we are on the sweat of our workers. They've taken next to no money when they could have had 8,000 to 15,000 in straight papers doing this sort of job. . . . They do it so they can be their own boss. So they can own and control the organization they work in. So they can make the paper what *they* want it to be. . . . (interview, member of Alternative Newspaper)

Social stratification. In the ideal-type bureaucracy, the dimensions of social stratification are consistent with one another. Specifically, social prestige and material privilege are to be commensurate with one's positional rank, and the latter is the basis of authority in the organization. Thus, a hierarchical arrangement of offices implies an isomorphic distribution of privilege and prestige. In this way, hierarchy institutionalizes (and justifies) inequality.

In contrast, egalitarianism is a central feature of the collectivist-democratic organization. Large differences in social prestige or privilege, even where they are commensurate with level of skill or authority in bureaucracy, would violate this sense of equity. At the Free Clinic, for instance, all full-time staff members were paid equally, no matter what skills or experience they brought to the clinic. At the Law Collective and Alternative Newspaper pay levels were set "to each according to his need." Here salaries took account of dependents and other special circumstances contributing to need, but explicitly excluded considerations of the worth of the individual to the organization. In no case I observed was the ratio between the highest pay and the lowest pay greater than two to one.

In larger, more complex, democratic organizations wages are still set, and wage differentials strictly limited, by the collectivity. For example, in the 65 production

⁶ The self-exploitation common in collectivist organizations and the justifications for it (e.g., autonomy, control over the workplace, self-expression in work) are similar to that of the small entrepreneur. It may be that as economic concentration and oligopolistic control over markets renders traditional entrepreneurial activity obsolete, collectively-owned enterprises may grow. For, in many ways, collectivist efforts evoke the old entrepreneurial spirit, but today it may require the intense work and self-sacrifice of many people rather than just one to make a fledgling enterprise viable.

cooperatives that constitute the Mondragón system in Spain pay differentials are limited to a ratio of three to one in each firm (Johnson and Whyte, 1977). In the worker-owned and managed refuse collection firms in San Francisco, the differential is only two to one, or less (Russell, et al., 1979; Perry, 1978). Schumacher (1973:276) reports a seven to one ratio between the highest and the lowest paid at Scott Bader, a collectively-owned firm in England. The cooperatively-owned plywood mills in the Pacific Northwest pay their members an equal wage (Bernstein, 1976:20-1). By comparison, the wage differential tolerated today in Chinese work organizations is 4:1; in the United States it is about 100:1.

Prestige, of course, is not as easily equalized as is pay. Nonetheless, collectivist organizations try in a variety of ways to indicate that they are a fraternity of peers. Through dress, informal relations, task sharing, job rotation, the physical structure of the workplace, equal pay, and the collective decision-making process itself—collectives convey an equality of status. As Mansbridge (1977) observes of collectives, reducing the sources of status inequality does not necessarily lead to the magnification of trivial differences. Likewise, decreasing the material differentials between individuals in a collectivist organization does not ordinarily produce a greater emphasis on status distinctions.

Differentiation. A complex network of specialized, segmental roles marks any bureaucracy. Where the rules of scientific management hold sway, the division of labor is maximized: jobs are subdivided as far as possible. Specialized jobs require technical expertise. Thus, bureaucracy ushers in the ideal of the specialist-expert and defeats the cultivated, renaissance man of an earlier era (Weber, 1946:240-4).

In contrast, differentiation is minimized in the collectivist organization. Work roles are purposefully kept as general and wholistic as possible. They aim to eliminate the division of labor that separates intellectual workers from manual workers, administrative tasks from performance tasks. Three means are commonly utilized toward this end: role rotation,

teamwork or task sharing, and the diffusion or demystification of specialized knowledge through internal education.

Ideally, universal competence (of the collective's members) would be achieved in the tasks of the organization. It is the *amateur-factotum* then who is ideally suited for the collectivist organization. In the completely democratized organization, everyone manages and everyone works. This may be the most fundamental way in which the collectivist mode of organization alters the social relations of production.⁷

This alteration in the division of labor is perhaps best illustrated by the Free School, an organization in which administrative functions were quite simple, and undifferentiated. The Free School had no separate set of managers to administer the school. Whenever administrative tasks were recognized, "coordination meetings" were called to attend to them; these were open to all interested teachers and students. Coordinators were those who were willing to take responsibility for a particular administrative task (e.g., planning curriculum, writing a press release, organizing a fund-raiser). A coordinator for one activity was not necessarily a coordinator for another project. Further, the taking on of administrative tasks was assumed to be a part-time commitment which could be done along side of one's other responsibilities. Coordinators, then, were *self-selected*, *rotated*, and *part-time*. No one was allowed to do administration exclusively. By simplifying administration and opening it up to the membership-at-large, the basis and pretense of special expertise was eliminated.

The school even attempted to break down the basic differentiation between students and staff, regarding students not as clients but as members with decision-

⁷ Industrial organizations in China have implemented similar changes in the division of labor. These were considered an essential part of transforming the social relations of production. Their means for reducing the separation of intellectual work from manual work and administration from performance tasks were similar to those used by the alternative work organizations reported in this paper: team work, internal education, and role rotation. For specific points of comparison see Bettelheim (1974) and Whyte (1973).

making rights and responsibilities. The Free Clinic also tried to integrate its clients into the organization. For instance, it created spaces on its board of directors for consumers of medical care and recruited many of its volunteers from the ranks of its patients.

Most alternative organizations are more complex than the Free School. They cannot assume that everyone in the organization knows how (or would want to know how) to do everything. Thus, they must develop explicit procedures to achieve universal competence. Such procedures, in effect, attack the conventional wisdom of specialized division of labor and seek to create more integrated, multifaceted work roles.

The Alternative Newspaper, for example, utilizes task sharing (or team work), apprenticeships, and job rotations toward this end. Instead of assigning one full-time person to a task requiring one person, they would be more likely to assign a couple of people to the task part-time. Individuals' allocations of work often combine diverse tasks, such as 15 hours writing, 15 hours photography, and 10 hours production. In this way, the distribution of labor combines satisfying tasks with more tedious tasks and manual work with intellectual work. People do not enter the paper knowing how to do all of these jobs, but the emphasis on task sharing allows the less experienced to learn from the more experienced. Likewise, if a task has few people who know how to perform it well, a person may be allocated to apprentice with the incumbent. Internal education is further facilitated by occasional job rotations. Thus, while the Alternative Paper must perform the same tasks as any newspaper, it attempts to do so without permitting the usual division of labor into specialties or its concomitant monopolization of expertise.

Minimizing differentiation is difficult and time consuming. The Alternative Paper, for instance, spent a total of fifteen hours and forty minutes of formal meeting time and many hours of informal discussion in planning one systematic job rotation. Attendance at the planning meetings was 100%. The time and priority typically devoted to internal education in collec-

tivist organizations makes sense only if it is understood as part of a struggle against the division of labor. The creation of an equitable distribution of labor and wholistic work roles is an essential feature of the collectivist organization.

Table 1 summarizes the ideal-type differences between the collectivist mode of organization and the bureaucratic.⁸ Democratic control is the foremost characteristic of collectivist organization, just as hierarchal control is the defining characteristic of the smoothly-running bureaucracy. Thus, collectivist-democratic organization would transform the social relations to production. Bureaucracy maximizes formal rationality precisely by centralizing the locus of control at the top of the organization; collectives decentralize control such that it may be organized around the alternative logic of substantive rationality.

Imperfect Democracy: Constraints and Social Costs

Various constraints limit the actual attainment of democracy, and even to the extent that the collectivist-democratic ideal is achieved, it may produce social costs that were unanticipated. This section outlines some of the more important of these constraints and social costs.

Judgments about the relative importance of the listed social costs are intri-

⁸ The eight dimensions discussed here are clearly interrelated, a point not explored herein. However, there is evidence from bureaucracies that they are also somewhat independent (Hall, 1963). That is, an organization may be highly collectivist on one dimension but not so on another. The interrelationships between these variables may be elusive. For instance, of seven propositions offered by Hage (1965) in an axiomatic theory of organizations, six could be supported by the organizations in this study. One, however, that higher complexity produces lower centralization, was contradicted by the evidence of this study, although it has received empirical support in studies of social service bureaucracies (Hage, 1965; Hage and Aiken, 1970). Hage suggests that relationships in organizational theory may be curvilinear: when organizations approach extreme scores the extent relationships may no longer hold or may actually be reversed. This is an important limitation to bear in mind, especially as we begin to consider organizations, such as the ones in this study, that are by design extreme on all eight continua proposed in this model.

Table 1. Comparisons of Two Ideal Types of Organization

Dimensions	Bureaucratic Organization	Collectivist-Democratic Organization
1. Authority	1. Authority resides in individuals by virtue of incumbency in office and/or expertise; hierarchal organization of offices. Compliance is to universal fixed rules as these are implemented by office incumbents.	1. Authority resides in the collectivity as a whole; delegated, if at all, only temporarily and subject to recall. Compliance is to the consensus of the collective which is always fluid and open to negotiation.
2. Rules	2. Formalization of fixed and universalistic rules; calculability and appeal of decisions on the basis of correspondence to the formal, written law.	2. Minimal stipulated rules; primacy of ad hoc, individuated decisions; some calculability possible on the basis of knowing the substantive ethics involved in the situation.
3. Social Control	3. Organizational behavior is subject to social control, primarily through direct supervision or standardized rules and sanctions, tertiary through the selection of homogeneous personnel especially at top levels.	3. Social controls are primarily based on personalistic or moralistic appeals and the selection of homogeneous personnel.
4. Social Relations	4. Ideal of impersonality. Relations are to be role-based, segmental and instrumental.	4. Ideal of community. Relations are to be wholistic, personal, of value in themselves.
5. Recruitment and Advancement	5.a. Employment based on specialized training and formal certification. 5.b. Employment constitutes a career; advancement based on seniority or achievement.	5.a. Employment based on friends, social-political values, personality attributes, and informally assessed knowledge and skills. 5.b. Concept of career advancement not meaningful; no hierarchy of positions.
6. Incentive Structure	6. Remunerative incentives are primary.	6. Normative and solidarity incentives are primary; material incentives are secondary.
7. Social Stratification	7. Isomorphic distribution of prestige, privilege, and power; i.e., differential rewards by office; hierarchy justifies inequality.	7. Egalitarian; reward differentials, if any, are strictly limited by the collectivity.
8. Differentiation	8.a. Maximal division of labor: dichotomy between intellectual work and manual work and between administrative tasks and performance tasks. 8.b. Maximal specialization of jobs and functions; segmental roles. Technical expertise is exclusively held: ideal of the specialist-expert.	8.a. Minimal division of labor: administration is combined with performance tasks; division between intellectual and manual work is reduced. 8.b. Generalization of jobs and functions; wholistic roles. Demystification of expertise: ideal of the amateur factotum.

cately tied to cultural values. Alternative organizations may be mistakenly assessed when seen through the prism of the norms and values of the surrounding bureaucratic society.

Time. Democracy takes time. This is one of its major social costs. Two-way communication structures may produce higher morale, the consideration of more

innovative ideas, and more adaptive solutions to complex problems, but they are undeniably slow (Leavitt, 1964:141-50). Quite simply, a boss can hand down a bureaucratic order in a fraction of the time it would take a group to decide the issue democratically.

The time absorbed by meetings can be extreme in democratic groups. During the

early stages of the Alternative Newspaper, for instance, three days out of a week were taken up with meetings. Between business meetings, political meetings, and "people" meetings, very little time remained to do the tasks of the organization. Members quickly learn that this is unworkable. Meetings are streamlined. Tasks are given a higher priority. Even so, constructing an arrangement that both saves time and ensures effective collective control may prove difficult: Exactly which meetings are dispensable? What sorts of decisions can be safely delegated? How can individuals still be held accountable to the collectivity as a whole? These sorts of questions come with the realization that there are only 24 hours in a day.

There is a limit, however, to how streamlined collectivist meetings can get. In the end, commitment to decisions and their implementation can only be assured in collectives through the use of the democratic method. Unilateral decisions, albeit quicker, would not be seen as binding or legitimate. With practice, planning and self-discipline, groups can learn to accomplish more during their meeting time. But once experience is gained in how to conduct meetings, time given to meetings appears to be directly correlated with level of democratic control. The Free Clinic, for instance, could keep its weekly staff meetings down to an average of one hour and fifteen minutes only by permitting individual decision making outside-the-meeting to a degree that would have been unacceptable to members of the Alternative Paper, where a mean of four hours was given over to the weekly staff meeting.

Homogeneity. Consensus, an essential component of collectivist decision making, may require from the outset substantial homogeneity. To people who would prefer diversity, this is a considerable social cost.

Bureaucracy may not require much homogeneity, partly because it does not need the moral commitment of its employees. Since it depends chiefly on remunerative incentives to motivate work and since in the end it can command obedience to authority, it is able to unite the energies of diverse people toward

organizational goals. But, in collectives where the primary incentives for participation are value-purposive and the subordinate-superordinate relation has been delegitimated, moral commitment becomes necessary. Unified action is possible only if individuals substantially agree with the goals and processes of the collective. This implies a level of homogeneity (in terms of values) unaccustomed and unnecessary in bureaucracy.⁹

Consequently, collectivist organizations also tend to attract a homogeneous population in terms of social origins. At the Alternative Paper full-time staff members came from families where the mean parental income was about \$29,000. A random sampling of the general membership of the Food Co-op (consisting of 1,100 people) reveals an average parental income of \$19,500, while the most active members of the Co-op, the staff and board, show a mean parental income of \$46,000. In addition to being of financially privileged origins, people in alternative organizations tend to come from well-educated families. In both of the above organizations, over half of the mothers had at least some college; fathers on the average had acquired some graduate or professional training beyond the B.A. Thus, the need for substantial agreement on the values, goals and processes of the collective, in effect, has limited their social base. This is an important constraint to members who would like to

⁹ Organizations which are homogeneous in this sense probably register substantial agreement over organizational goals (or what Thompson and Tuden [1959] call "preferences about outcomes"), but register considerable disagreement about how to get there ("beliefs about causation"). In such cases, Thompson and Tuden predict that organizations will reach decisions by majority judgment. A collegium type of organization, they maintain, is best suited for solving judgmental problems. This would require all members to participate in each decision, route pertinent information about causation to each member, give each member equal influence over the final choice, require fidelity to the group's preference structure, and designate as ultimate choice the judgment of the majority. On all but the last point they correctly describe collectivist work organizations. Further, as they point out, the social science literature does not contain models of this type of organization as it does for bureaucracy (Thompson and Tuden, 1959:200).

broaden the base of their social movement.

This is also an important constraint in organizations with heterogeneous populations of employees. For example, International Group Plans, a Washington, D.C. insurance company, is in the process of trying to democratize its ownership and governance structure (Zwerdling, 1977). To many of its employees who do not share collectivist values, democratization may only mean added time and responsibility; and they may wish to retain the traditional separation of managers and workers.

To guard against this problem and to ensure that all members profess collectivist values, alternative organizations tend to recruit very selectively. The Law Collective, for instance, instituted a probationary period of six months on top of its careful selection procedures.

In sum, cultural homogeneity makes reaching and abiding by a consensus easier, but it may constrain the social base of collectivist organization.

Emotional intensity. The familial, face-to-face relationships in collectivist organizations may be more satisfying than the impersonal relations of bureaucracy, but they are also more emotionally threatening. The latter may be experienced as a social cost of participatory organization.

Interpersonal tension is probably endemic in the directly democratic situation, and members certainly perceive their workplaces to be emotionally intense. At the Law Collective a member warns that "plants die here from the heavy vibes." At the Alternative Newspaper I observed headaches and other signs of tension before meetings in which divisive issues would be raised. A study of the New England town meeting found citizens reporting headaches, trembling, and even fear for one's heart as a result of the meetings. Altogether, a quarter of the people in a random sample of the town spontaneously suggested that the conflictual character of the meetings disturbed them (Mansbridge, 1979; 1973).

To allay these fears of conflict, townspeople utilize a variety of protective devices: criticism is concealed or at least softened with praise, differences of opin-

ion are minimized in the formulation of a consensus, private jokes and intimate communications are used to give personal support during the meetings. Such avoidance patterns have the unintended consequence of excluding the not fully-integrated member, withholding information from the group, and violating the norms of open participation. Further, these same fears of conflict and avoidance patterns are in evidence even in groups which are highly sensitive to these issues and in which many members have been trained in group process (Mansbridge, 1979).

The constancy of such feelings in all of the groups I observed suggests that they are rooted in the structure of collectivist decision making. Although participants generally attribute conflict and avoidance to the stubborn, wrongheaded, or otherwise faulty character of others, it may be an inherent cost of participatory-democracy.

Structural tensions inherent in collectivist organization render conflict difficult to absorb. First, the norm of consensual decision making in collectives makes the possibility of conflict all the more threatening because unanimity is required (where a majoritarian system can institutionalize and absorb conflicting opinions). Second, the intimacy of face-to-face decision making personalizes the ideas that people espouse and thereby makes the rejection of those ideas harder to bear (while a more formal bureaucratic system, to the extent that it disassociates an idea from its proponent, makes the criticism of ideas less interpersonally risky).

Nondemocratic individuals. Due to prior experiences, many people are not very well-suited for participatory-democracy. This is an important constraint on its development.

The major institutions of our society, such as educational institutions, combine to reinforce ways of thinking, feeling, and acting that are congruent with capitalist-bureaucratic life and incompatible with collectivist orientations. For example, Jules Henry (1965) has shown how the norms of capitalist culture become the hidden curriculum of the school system. Even at the preschool level, the

qualities of the bureaucratic personality are unconsciously, but nevertheless consistently, conveyed to children (Kanter, 1972b). In fact, Bowles and Gintis (1976) argue that the chief function of the entire educational apparatus is to reproduce the division of labor and hierarchal authority of capitalism.

In the face of these behavior-shaping institutions, it is very difficult to sustain collectivist personalities. It is asking, in effect, that people in collectivist organizations constantly shift gears, that they learn to act one way inside their collectives and another way outside. In this sense, the difficulty of creating and sustaining collectivist attributes and behavior patterns results from a cultural disjuncture. It derives from the fact that alternative work organizations are as yet isolated examples of collectivism in an otherwise capitalist-bureaucratic context. Where they are not isolated, that is, where they are part of an interlocking network of cooperative organizations, such as the Mondragón system in Spain (Johnson and Whyte, 1977) this problem is mitigated.

In their present context the experience of the alternative institutions has shown that selecting people with collectivist attitudes does not guarantee that these attitudes will be effectively translated into cooperative behavior (see, e.g., Swidler, 1976; Taylor, 1976; Torbert, 1973).

Nevertheless, a number of recent case studies of democratic workplaces, one of the worker-owned refuse collection companies (Russell et al., 1979; Perry, 1978) and one of a women's health collective (Bart, 1979), reveal that the experience of democratic participation can alter peoples' values, the quality of their work, and ultimately, their identities. In a comparative examination of many cases of workers' participation, Bernstein (1976:91-107) finds democratic consciousness to be a necessary element for effective workers' control to take place.

Fortunately, the solution to this problem of creating democratic consciousness (and behavior) may be found in the democratic method itself. In this vein, Pateman has amassed a considerable body of evidence from research on political socialization in support of the classical arguments

of Rousseau, Mill, and Cole. She concludes:

We do learn to participate by participating and . . . feelings of political efficacy are more likely to be developed in a participatory environment. . . . The experience of a participatory authority structure might also be effective in diminishing tendencies toward non-democratic attitudes in the individual. (1970:105)

Elden (1976) provides further empirical support for Pateman's position that participation enhances feelings of political efficacy. If bureaucratic organizations thwart the sense of efficacy that would be needed for active participation in democracy (see Blumberg, 1973:70-138), then collectivist-democratic organizations must serve an important educative function, if they are to expand beyond their currently limited social base.¹⁰

Environmental constraints. Alternative organizations, like all organizations, are subject to external pressures. Because they often occupy an adversary position vis-à-vis mainstream institutions, such pressures may be more intense. Extra-organizational constraints on the devel-

¹⁰ To Pateman (1970) the theory of participatory-democracy rises or falls on this educative function. But other social scientists (see especially, Argyris, 1974) remain unconvinced that participation in collectivist-democratic processes of organization can produce the desired changes in peoples' behavior. For Argyris, unilateral, defensive, closed, mutually protective, non-risk-taking behavior, what he calls Model I behavior, is nearly universal: it permeates not only western bureaucracies but also counter-bureaucracies such as alternative schools as well as collectivist organizations in contemporary China and Yugoslavia. Change in organizational behavior cannot be expected to follow from fundamental change in the mode of production; for Model I behavior is rooted in the pyramidal values of industrial culture and in the finiteness of the human mind as an information processing machine in the face of environmental complexity.

Contrarily, I am arguing that where people do not have participatory habits, it is because they generally have not been allowed any substantive control over important decisions. Nondemocratic (pyramidal) habits are indeed a problem for democratic groups, but they are not a problem that a redistribution of power could not resolve. Admittedly, the evidence is not yet conclusive on this issue, but much of it does indicate that the practice of democracy itself develops the capacity for democratic behavior among its participants (see especially, Blumberg, 1973; Pateman, 1970).

opment of collectivist organizations may come from legal, economic, political, and cultural realms.

It is generally agreed among free schoolers, for instance, that building and fire codes are most strictly enforced for them (Kozol, 1972; Graubard, 1972). This is usually only a minor irritant, but in extreme cases, it may involve a major disruption of the organization, requiring them to move or close down. One small, collectively-run, solar power firm was forced to move its headquarters several times through this sort of legal harassment. At one site, the local authorities charged over a hundred building "violations" (Etzkowitz, 1978). An even more far-reaching legal obstacle is the lack of a suitable statute for incorporating employee-owned and controlled firms. The Alternative Newspaper, for example, had to ask an attorney to put together corporate law in novel ways in order to ensure collective control over the paper.¹¹

The law can be changed but the more ubiquitous forces against collectivism are social, cultural, and economic. In fact, alternative organizations often find that bureaucratic practices are thrust on them by established institutions. The Free School, for example, began with an emphatic policy of absolutely no evaluative records of students. In time, however, it found that in order to help its students transfer back into the public schools or gain entrance into college, it had to begin keeping or inventing records. The preoccupation of other organizations with records and documents may thus force record keeping on a reluctant free school. In another free school, the presence of a steady stream of government communications and inspectors (health, building, etc.) pushed the

organization into creating a special job to handle correspondence and personal visits of officials (Lindenfeld, 1979).

Alternative organizations often strive to be economically self-sustaining, but without a federated network of other cooperative organizations to support them, they cannot. Often they must rely on established organizations for financial support. This acts as a constraint on the achievement of their collectivist principles. For instance, in order to provide free services, the Free Clinic needed and received financial backing from private foundations as well as from county revenue-sharing funds. This forced them to keep detailed records on expenditures and patient visits and to justify their activities in terms of outsiders' criteria of cost-effectiveness.

In less fortunate cases, fledgling democratic enterprises may not even get off the ground for failure to raise sufficient capital. Two recent attempts by employee groups to purchase and collectively manage their firms reveal the reluctance of banks to loan money to collectivist enterprises, even where these loans would be guaranteed by the government. From the point of view of private investors, collective ownership and management may appear, at best, an unproven method of organizing production, and at worst, a dangerous method.¹²

For a consistent source of capital, collectivist enterprises may need to develop cooperative credit unions as the Mondragón system has done (Johnson and Whyte, 1977) or an alternative investment fund. In many collectives, the unpaid (or poorly paid) labor of the founders forms the initial capital of the organization, enabling some measure of financial autonomy. In any case, the larger issue of organization-environment relations remains problematic, particularly when we are considering collectivist-democratized organizations in a capitalist-bureaucratic context.¹³

¹¹ The result of this effort was a two-tiered structure: the paper was incorporated as a general corporation and a trust, which owns all the stock in the paper. Each six months of full-time work is worth one voting share in the trust. This grants ultimate control of the paper to the staff, past and present. Immediate control is exercised by the board of directors of the corporation, which consists of the currently working staff. As a member of the paper said, "the structure is neither graceful nor simple, but it . . . guarantees that the working staff will maintain editorial control, and makes it nearly impossible ever to sell the paper."

¹² See, the abortive attempts to raise capital for employee-ownership at Kasanof's Bakery, *The Boston Phoenix*, April 26, 1977, and at the Colonial Press in Clinton, Massachusetts.

¹³ Organization-environment relations are always reciprocal. In part, the low wages, hard work and intense personal involvement that make collectivist

Individual differences. All organizations, democratic ones notwithstanding, contain persons with very different talents, skills, knowledge, and personality attributes. Bureaucracies try to capitalize on these individual differences, so that ideally people with a particular expertise or personality type will be given a job, rewards, and authority commensurate with it. In collectives such individual differences may constrain the organization's ability to realize its egalitarian ideals.

Inequalities in influence persist in the most egalitarian of organizations. In bureaucracies the existence of inequality is taken for granted, and in fact, the exercise of power is built into the opportunity structure of positions themselves (Karter, 1977). However, in collectivist organizations, this may be less true. Here, precisely because authority resides in the collectivity as a unit, the exercise of influence depends less on positional opportunities and more on the personal attributes of the individual. Not surprisingly, members who are more articulate, responsible, energetic, glamorous, fair, or committed carry more weight in the group.¹⁴ John Rice, a teacher and leader of Black Mountain (a group that "seceded" from the educational system and anticipated the free school movement) argued that Black Mountain came as close to democracy as possible: the economic status of the individual had nothing to do with community standing. But beyond that, "the differences show up . . . [;] the test is made all day and every day as to who is the person to listen to" (Duberman, 1972:37).

Some individual differences are accepted in the collectivist organization, but not all, particularly not differences in knowledge. In bureaucracy differences of skill and knowledge are honored. Spe-

cialized jobs accompany expertise. People are expected to protect their expertise. Indeed, this is a sign of professionalism, and it is well-known that the monopolization of knowledge is an effective instrument of power in organizations (Weber, 1968; Crozier, 1964). For this very reason, collectivist organizations make every attempt to eliminate differentials in knowledge. Expertise is considered not the sacred property of the individual, but an organizational resource. In collectives, individually-held skills and knowledge are demystified and redistributed through internal education, job rotation, task sharing, apprenticeships, or any plan they can devise toward this end.¹⁵

The diffusion or demystification of knowledge, while essential to help equalize patterns of influence, involves certain trade-offs. Allowing a new person to learn to do task X by rotating her/him to that job may be good for the development of that person, but it may displace an experienced person who had received a sense of satisfaction and accomplishment in job X. Further, encouraging novices to learn by doing may be an effective form of pedagogy, but it may detract from the quality of goods or services that the organization provides, at least (theoretically) until universal competence in the tasks of the organization is reached.

Even in the collectivist organization that might achieve universal competence, other sources of unequal influence would persist (e.g., commitment level, verbal fluency, social skills).¹⁶ The most a democratic organization can do is to remove the bureaucratic bases of authority: positional rank and expertise. The task of any collectivist-democratic workplace, and it is no easy task, is to eliminate all bases of individual power and authority, save those that individuals carry in their person.

organizations seem so costly may be due to costs imposed by the environment. Conversely, collectivist organizations rely upon goods and services produced by the surrounding bureaucratic organizations, e.g., light bulbs, fast food chains.

¹⁴ Swidler (1976) vividly describes the extent to which members of a free school will literally ransack their private lives to locate sources of glamour that will enhance their sense of worth and influence in the group.

¹⁵ A case study of the demystification of skills in a collectivist work organization is provided by Bart (1979).

¹⁶ Mansbridge (1977) observes that even the most genuinely democratic organization will accept some measure of inequality of influence in order to retain individual liberties.

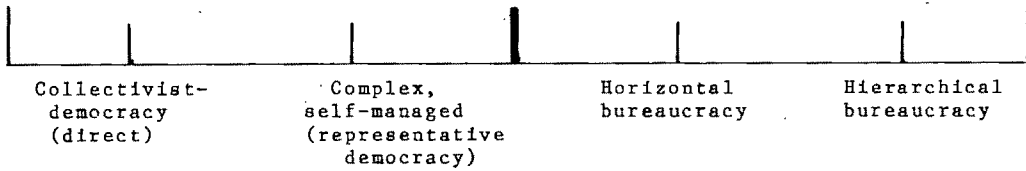


Figure 1. Range of Organizational Forms

Conclusion

The organizations in this study are admittedly rare and extreme cases. To the extent that they reject received forms of organization, they present an anomaly. For precisely this reason they are of great theoretical significance. By approaching the polar opposites of bureaucracy, they allow us to establish the limits of organizational reality. The parameters appear to be far wider than students of organizations have generally imagined. Once the parameters of the organizational field have been defined, concrete cases can be put into broader perspective. Professional organizations, for example, while considerably more horizontal than the strictly hierarchical bureaucracy (Litwak, 1961), are still far more hierarchical than the collectivist-democratic organization. Thus, we may conceive of the range of organizational possibilities illustrated in Figure 1.

By contrasting collectivist democracy and rational bureaucracy along eight continuous dimensions, this paper has emphasized the quantitative differences between the two. In many ways, this understates the difference. At some point differences of degree produce differences of kind. Fundamentally, bureaucracy and collectivism are oriented to qualitatively different principles. Where bureaucracy is organized around the calculus of formal rationality, collectivist-democracy turns on the logic of substantive rationality.

If, in the Weberian tradition, we take the basis of authority as the central feature of any mode of organization, then organizations on the right half of Figure 1 empower the *individual* with authority (on the basis of office or expertise), while organizations on the left side grant ultimate authority only to the *collectivity* as a whole unit. Moreover, if, following

Marx's lead, we take the division of labor as the key to the social relations of production, organizations on the right side of the diagram maintain a sharp division between managers and workers, while organizations on the left side are integrative: those who work also manage. Departures of this magnitude from established modes of organization may be considered a "social invention" (Coleman, 1970).

Organization theory has for the most part considered only the right half of this spectrum, and indeed, the vast majority of organizations in our society do fall on the right side of the continuum. Still, we gain perspective on these organizations by putting them into a broader frame of reference. With the proliferation of collectivist organizations both in this society and in others (e.g., China, Spain, Yugoslavia), we will need an alternative model of organization, one which they themselves aspire toward, by which to assess their impact and success. To wit, collectivist organizations should be assessed not as failures to achieve bureaucratic standards they do not share, but as efforts to realize wholly different values. It is in the conceptualization of alternative forms of organization that organizational theory has been weakest, and it is here that the experimentation of collectives will broaden our understanding.

REFERENCES

- Aldrich, Howard and Robert Stern
1978 "Social structure and the creation of producers' cooperatives." Presented at the Ninth World Congress of Sociology, Uppsala.
- Agyris, Chris
1973 "Personality and organization theory revisited." *Administrative Science Quarterly* 18:141-67.
- Bart, Pauline and Melinda Bart
1979 "Collective work and self-identity: the effect of working in a feminist abortion collec-

- tive." In F. Lindenfeld and J. Rothschild-Whitt (eds.), *Workplace Democracy and Social Change*. Boston: Porter Sargent. In press.
- Bates, F. L.
1970 "Power behavior and decentralization." Pp. 175-6 in M. Zald (ed.), *Power and Organizations*. Nashville: Vanderbilt University Press.
- Bendix, Reinhard
1962 *Max Weber: An Intellectual Portrait*. Garden City: Anchor Books.
- Bernstein, Paul
1976 *Workplace Democratization: Its Internal Dynamics*. Kent: Kent State University Press.
- Bettleheim, Charles
1974 *Cultural Revolution and Industrial Organization in China*. New York: Monthly Review Press.
- Blau, Peter
1970 "Decentralization in bureaucracies." Pp. 150-74 in M. Zald (ed.), *Power and Organizations*. Nashville: Vanderbilt University Press.
- Blumberg, Paul
1973 *Industrial Democracy: The Sociology of Participation*. New York: Schocken.
- Bowles, Samuel and Herbert Gintis
1976 *Schooling in Capitalist America*. New York: Basic Books.
- Clark, Peter B. and James Q. Wilson
1961 "Incentives systems: a theory of organizations." *Administrative Science Quarterly* 6:129-66.
- Coleman, James
1970 "Social inventions." *Social Forces* 49:163-73.
- Crozier, Michael
1964 *The Bureaucratic Phenomenon*. Chicago: University of Chicago Press.
- Duberman, Martin
1972 *Black Mountain: An Exploration in Community*. New York: Dutton.
- Edelstein, J. David and Malcolm Warner
1976 *Comparative Union Democracy: Organization and Opposition in British and American Unions*. New York: Wiley.
- Elden, J. Maxwell
1976 *Democracy at Work for a More Participatory Politics: Worker Self-Management Leads to Political Efficacy*. Ph.D. dissertation, Department of Political Science, University of California, Los Angeles.
- Etzioni, Amitai
1961 *A Comparative Analysis of Complex Organizations*. Glencoe: Free Press.
- Etzkowitz, Henry
1978 "The liberation of technology." *WIN Magazine* 14.
- Gardner, Richard
1976 *Alternative America*. Privately published.
- Glaser, Barney, and Anselm Strauss
1967 *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine.
- Gouldner, Alvin
1954 *Patterns of Industrial Bureaucracy*. Glencoe: Free Press.
- Graubard, Allen
1972 *Free the Children*. New York: Pantheon Books.
- Guerin, Daniel
1970 *Anarchism: From Theory to Practice*. New York: Monthly Review Press.
- Hage, Jerald
1965 "An axiomatic theory of organizations." *Administrative Science Quarterly* 10:289-320.
- Hage, Jerald and Michael Aiken
1970 *Social Change in Complex Organizations*. New York: Random House.
- Hall, Richard
1963 "The concept of bureaucracy: an empirical assessment." *American Journal of Sociology* 69:32-40.
- Henry, Jules
1965 *Culture Against Man*. New York: Vintage.
- Johnson, Ana Gutierrez and William Foote Whyte
1977 "The Mondragón system of worker production cooperatives." *Industrial and Labor Relations Review* 31:18-30.
- Jones, Derek
1979 "Producer cooperatives in the U.S.: an examination and analysis of socio-economic performance." Unpublished paper. Department of Economics, Hamilton College.
- Kanter, Rosabeth Moss
1972a *Commitment and Community*. Cambridge, Ma.: Harvard University Press.
1972b "The organization child: experience management in a nursery school." *Sociology of Education* 45:186-211.
1977 *Men and Women of the Corporation*. New York: Basic Books.
- Kanter, Rosabeth M. and Louis Zurcher, Jr.
1973 "Concluding statement: evaluating alternatives and alternative valuing." *Alternative Institutions, a special issue of the Journal of Applied Behavioral Science* 9:381-97.
- Kaye, Michael
1972 *The Teacher Was the Sea: The Story of Pacific High School*. New York: Links Books.
- Kozol, Jonathon
1972 *Free Schools*. Boston: Houghton-Mifflin.
- Leavitt, H. J.
1964 *Managerial Psychology*. Chicago: University of Chicago Press.
- Lindenfeld, Frank
1979 "Problems of power in a free school." In F. Lindenfeld and J. Rothschild-Whitt (eds.), *Workplace Democracy and Social Change*. Boston: Porter Sargent. In press.
- Lipset, S. M., Martin Trow, and James Coleman
1962 *Union Democracy*. New York: Anchor.
- Litwak, Eugene
1961 "Models of bureaucracy which permit conflict." *American Journal of Sociology* 67:177-84.
- McCauley, Brian
1971 *Evaluation and Authority in Radical Alter-*

- native Schools and Public Schools. Ph.D. dissertation, Department of Education, Stanford University.
- Mansbridge, Jane
 1973 "Town meeting democracy." Working Papers for a New Society 1:5-15.
 1977 "Acceptable inequalities." *British Journal of Political Science* 7:321-36.
 1979 "Fears of conflict in face-to-face democracies." In F. Lindenfeld and J. Rothschild-Whitt (eds.), *Workplace Democracy and Social Change*. Boston: Porter Sargent. In press.
- Mommsen, Wolfgang
 1974 *The Age of Bureaucracy: Perspectives on the Political Sociology of Max Weber*. New York: Harper and Row.
- Mouzelis, Nocos
 1968 *Organization and Bureaucracy: An Analysis of Modern Theories*. Chicago: Aldine.
- Pateman, Carole
 1970 *Participation and Democratic Theory*. Cambridge, Eng.: Cambridge University Press.
- Perrow, Charles
 1976 "Control in organizations: the centralized-decentralized bureaucracy." Presented at annual meeting of American Sociological Association, New York.
- Perry, Stewart
 1978 *Dirty Work, Clean Jobs, Proud Men*. Berkeley: University of California Press.
- Rothschild-Whitt, Joyce
 1976 "Conditions facilitating participatory-democratic organizations." *Sociological Inquiry* 46:75-86.
 1978 *Organizations Without Hierarchy: A Comparative Study of Collectivist-Democratic Alternatives to Bureaucracy*. Ph.D. dissertation, Department of Sociology, University of California, Santa Barbara.
- Russell, Raymond
 1979 "Rewards of participation on the worker-owned firm." In F. Lindenfeld and J. Rothschild-Whitt (eds.), *Workplace Democracy and Social Change*. Boston: Porter Sargent. In press.
- Satow, Roberta Lynn
 1975 "Value-rational authority and professional organizations: Weber's missing type." *Administrative Science Quarterly* 20:526-31.
- Schumacher, E. F.
 1973 *Small Is Beautiful: Economics As If People Mattered*. New York: Harper and Row.
- Swidler, Ann
 1976 "Teaching in a free school." Working Papers for a New Society 4:30-4.
 1979 *Organization Without Authority: Dilemmas of Social Control in Free Schools*. Cambridge, Ma.: Harvard University Press.
- Taylor, Rosemary
 1976 "Free medicine." Working Papers for a New Society 4:21-3, 83-94.
- Thompson, James D.
 1967 *Organizations in Action*. New York: McGraw-Hill.
- Thompson, James D. and Arthur Tuden
 1959 "Strategies, structures, and processes of organizational decision." Chap. 12 in J. Thompson (ed.), *Comparative Studies in Administration*. Pittsburgh: University of Pittsburgh Press.
- Torbert, William
 1973 "An experimental selection process for a collaborative organization." *Journal of Applied Behavioral Science* 9:331-50.
- Weber, Max
 1946 *From Max Weber: Essays in Sociology*. Trans. and ed. by Hans Gerth and C. Wright Mills. New York: Oxford University Press.
 1954 *Max Weber on Law in Economy and Society*. Cambridge, Ma.: Harvard University Press.
 1968 *Economy and Society*. Ed. by Guenther Roth and Claus Wittich. New York: Bedminster Press.
- Whyte, Martin King
 1973 "Bureaucracy and modernization in China: the Maoist critique." *American Sociological Review* 38:149-63.
- Wood, James R.
 1978 *Legitimate Leadership in Voluntary Organizations: The Controversy Over Social Action in Protestant Churches*. Unpublished monograph. Department of Sociology, University of Indiana, Bloomington.
- Zwerdling, Danie
 1977 "At IGP it's not business as usual." Working Papers for a New Society 5:68-81.

THE RELIGIOUS SWITCHER IN THE UNITED STATES*

FRANK NEWPORT

University of Missouri, St. Louis

American Sociological Review 1979, Vol. 44 (August):528-552

This paper examines trends, patterns and implications of religious mobility in the United States. Previously published data, and analysis of 1975-76 NORC data indicate that about 25% to 32% of American adults have switched religions (including movement out of religion) in their life times. High and Low Status denominations are gaining members due to switching (more in-mobility than out-mobility), and Baptists, Catholics and Medium Status denominations are losing members due to switching. The most common pattern of religious movement is out of religion altogether. Additional analyses show that religious switching patterns are congruent with explanations stressing the switcher's desire to worship with individuals of similar socioeconomic status, that some switching is the result of an individual moving to the religion of a stable spouse, and that movement out of religion is disproportionately composed of young people.

The American religious system evidences a remarkable degree of diversity of specific religious groups within an overall, broadly similar Christian framework. Eighty-five percent of all Americans report Christian affiliation, but with a dizzying array of well over 200 major, identifiable churches, denominations and sects (Jacquet, 1978:228).

Given this highly differentiated, yet generally similar set of religious bodies in the United States, it would seem reasonable that we would find a good deal of movement of individuals from religious body to religious body in an American process of religious mobility. These types of changes are made easy by the large number of potential sites for church memberships, and by the fact that the shift can usually be accomplished without the traumatic necessity of drastically altering one's basic beliefs, or rituals, or styles of religious interaction.

The study of this religious mobility

makes two specific contributions to the general attempt to understand religion in American society. First, it can be useful in analyzing general trends and patterns in religious affiliation, and in particular in understanding overall gains and losses in membership by religious bodies. Second, the analysis of religious mobility gives us an opportunity to understand the functions that religion plays in the lives of its adherents. If we identify those variables significantly related to religious switching, such as age, or socioeconomic status, or region of country, we can make reasonable inferences about the role that religion plays in the lives of these mobile individuals. These inferences, we assume, can lead us to more general conclusions about religion and its functions in contemporary American society.

Rodney Stark and Charles Glock (1968) initiated a recent renaissance of interest in religious switching with their inclusion of a chapter on the topic in *American Piety*. Since then a number of studies have appeared in the literature dealing with the amount and type of switching, and with explanations for the observed mobility. Of great significance has been the inclusion by the National Opinion Research Corporation of careful and detailed questions about respondents' religious affiliation, and the religious affiliation of the respondents' parents, in their annual General Social Surveys. The presence of these variables, and the general availability and usefulness of the Surveys, have created a

* Direct all communications to: Frank Newport; Department of Sociology/Anthropology/Social Work; University of Missouri, 8001 Natural Bridge Rd.; St. Louis, MO 63121.

This is a revised and expanded version of a paper presented at the annual meeting of the Southwestern Social Science Association, Dallas, 1977. The data utilized in this paper were made available by the Inter-University Consortium for Political and Social Research, and originally were collected by James A. Davis of the National Opinion Research Center, University of Chicago. Neither the original collector of the data nor the consortium bear any responsibility for the analyses or interpretations presented here.

situation in which religious mobility can now be studied in some detail, using a nationwide, reliable sample of individuals from the United States.

Using information in previous studies in the research literature, and the information gained from new analyses of the NORC data gathered in 1975 and 1976, this paper will investigate and summarize what we know about religious switching in this country. We will have two primary goals in presenting this material: first, to arrive at a relatively thorough description of the amount and process of mobility in the United States, and second, to examine empirical support for several of the more prominent theoretical explanations for the observed mobility. A fairly comprehensive picture of religious mobility in this country should emerge from these analyses, one which will give us a good sense of the implications of this mobility for the study of religious behavior in general.

Data. The analyses in this paper will be accomplished on a combined sample from the 1975-76 General Social Surveys of NORC, with an N of 2,689. These data, as evidenced by the wide use to which they have been put in recent years, are extremely useful to scholars of the sociology of religion. (Further technical information on these data is obtainable in ICPSR, 1975; 1976.)

Religion is coded by NORC into the following categories: Catholic, Protestant, Jewish, Other and No Religion; for Protestants, it is further coded into some 97 different Protestant categories. The combination of this information produces a nominal level religion variable with 101 levels, somewhat cumbersome for most analysis procedures. There are two ways of handling this variable. The first is to collapse into theologically similar categories (such as the "liberal denominations," "moderate denominations," and "conservative denominations" categories used by Stark and Glock). The second is to collapse into categories containing denominations similar on other variables, the most useful of which is the socioeconomic status of members. In point of fact, both of these procedures yield categories which contain roughly the

same denominations, with high socioeconomic status denominations being the ones included in the liberal category. For the present analyses, I created socioeconomically homogeneous categories of religion as follows: (1) High Status denominations (Episcopalians, Presbyterians, Congregationalists, and others), (2) Medium Status denominations (Methodist, Lutheran, and others), (3) Baptists,¹ (4) Low Status denominations (Christian, Jehovah's Witnesses, Pentacostal, Assembly of God, and others), (5) Protestant, but no denomination, (6) Catholic, (7) Other, (8) Jewish, and (9) No Religion.²

The respondents in the NORC surveys were approximately half male and half female. At various points in the analyses which follow, we will use the basic sample, Heads of Households (males, single and divorced females, and spouses for married females), and males and single females only. These will be noted at appropriate points.

DESCRIPTION OF RELIGIOUS MOBILITY

Amount of Religious Switching

Although the primary purpose of this paper is not to investigate trends in religious mobility over time, we can look briefly at summary statistics reported in the literature which deal with data collected as long ago as 1955. The study of trends in mobility is a rather complex problem, as has been well documented (Duncan, 1966), and such analyses usually require as a starting point a basic mobility transition matrix, which is not provided in several of the studies under review here. All of the studies, however, do report basic information on the percent of those interviewed who are in a different religion at the time of the survey from the one in which they report being raised. This basic statistic, *percent mobile*, is reported for seven studies, and for two different analyses of the 1975-76 data, in Table 1. We should be careful to emphasize here

¹ A separate category was created for Baptists, since they constitute the largest Protestant denomination in the United States.

² At some points in the analysis, a more detailed 13-category scheme will be used.

Table 1. Percent Mobile, Eight Studies of Religious Mobility

Reported in	Data Collected	Sample	% Mobile	# of Categories
Alston (1971)	1955	National M/F	15.5%	11
Warren (1970)	1960	National Males Only	17%	²
Nelson and Snizek (1976)	1960	National M/F	24%	10 ³
Lauer (1975)	¹	Midwestern Com- munity of 11,000 Heads of Household	24%	12
Stark and Glock (1968)	1965	National M/F (Whites Only)	35%	11
Marty et al. (1968)	1965	National M/F	20%	10
Roof and Hadaway (1977)	1973- 1976	National M/F	25.84%	8 ⁴
(Present Analysis)	1975- 1976	National Heads of Household	30%	13
(Present Analysis)	1975- 1976	National Heads of Household	28.12%	9

¹ No date indicated.² Not indicated.³ Excludes none.⁴ Excludes none and Jewish.

that this figure is affected by the degree of inclusiveness of the categories used in coding the data (information provided in the far right-hand column of Table 1). Note that the percent mobile in the 1975-76 data rises from 28.12% to 30% when we change from a 9-category to a 13-category coding scheme.

The 25.84% figure from Roof and Hadaway's (1977:410) data is a weighted average calculated from their broad sub-categories as reported in their Table 1. (The figure for Protestants only for these data is 31.75%.) Their categories of religious origin exclude Disciples of Christ, no religion, and various small Protestant bodies. In addition, Roof and Hadaway do not indicate what categories of destination religion were used in the basic calculations of their mobility rate.

Alston's (1971) figure of 15.5% in 1955 and Warren's (1970) report of 17% mobile in 1960 are the two outliers among these figures. Warren's figure is particularly noteworthy, since it is a full 7% less than the figure of Nelson and Snizek (1976), even though both data sets were collected in the same year (1960) from nationwide samples. Warren's sample deals with men only, which may account for some of the

difference.³ A more probable explanation for the differences may be the coding scheme used, since Warren apparently utilizes a very broad scheme of only three major Protestant groupings, which could account for the relatively low percent mobile rate he reports. There is no ready explanation for Alston's low figure, other than the most obvious: there was, in the United States, less switching in the 1950s than in more recent years.

Processes of Religious Switching

We turn now to the important question of the dynamics or precise patterns which constitute the reported religious switching behavior. In particular, we are interested in three areas: (a) the percent of individuals leaving the various religious bodies, (b) the percent of individuals moving into the various religious bodies, and (c) the specific paths of mobility from particular religious body to particular religious body.

Only three of the studies in Table 1 report data which can be used to address

³ Analyses of the 1975-76 data, however, indicate a very small difference between men and women in the percent mobile.

these problem areas: Stark and Glock's (1968) important analysis of the switching process using data collected in 1965, Lauer's (1975) report of data gathered in a "small midwestern community" (for which no date is given), and, to a limited degree, Roof and Hadaway's (1977) analysis of national data collected in the mid-1970s. After a brief review of these three reports, the 1975-76 data will be analyzed in detail.

The data used by Stark and Glock (1968:191-4),⁴ as they are careful to point out, have limitations, but their analyses are seminal and mark the benchmark against which all subsequent analyses must be compared.

Stark and Glock reach seven basic conclusions from their analyses. First, liberal denominational bodies were gaining in membership, while conservative bodies were losing membership when the net gains or losses due to switching were calculated. Second, this process seemed to be taking place because of a movement from the conservative Protestant bodies into the liberal Protestant bodies:

Thus these national data provide a cautious confirmation of the trends revealed in the California data: in the process of Protestant church-switching liberal and moderate bodies are gaining membership at the expense of conservatives. (1968:198)

Third, there was a slight tendency for this pattern of movement to be accentuated in urban as opposed to rural areas (1968:199-200). Fourth, the liberal denominations actually held on to *fewer* of their members than did the Baptists and Catholics, but they managed to attract many more in-migrants. This explains the gain due to switching by the liberal denominations, and the loss due to switching by the Baptists (and the stability of Catholics). Fifth, there was a considerable net loss due to switching experienced by the *No Religion* category (-31%). Sixth, Stark and Glock speculated about the existence of an "up and out" effect

wherein the low and moderate denominations' members moved up into the liberal denominations, with the members of the liberal denominations moving out of active participation in religion altogether. Finally, Stark and Glock (1968:199, 203) discussed the difference between changes in membership figures recorded by the denominations, and the net gains and losses due to switching calculated from their data. Most of these findings will be discussed in some detail in conjunction with the analysis of the 1975-76 data below.

Lauer's (1977:384) data are reported in a simple cross-tabulation table which evidences the same basic trends observed in Stark and Glock's nationwide sample. The liberal denominations (Episcopalian, Presbyterian, and Unitarian) enjoyed net gains in Lauer's midwestern community. Catholics and Baptists suffered net losses. Importantly, Lauer's data show a large *increase* in the number of individuals reporting no religion (30%), a significant and direct contrast to the findings of Stark and Glock.

Roof and Hadaway's (1977) analysis of the NORC General Social Surveys of 1973, 1974, 1975, and 1976 unfortunately is reported in a limited fashion. They do not present a full matrix or mobility table, they do not separate out the various destination categories of groups of religious switchers, they do not present data on the percent of the current numbers of adherents in a religion who were not raised in that religion (although these figures can be calculated from their presentation), and they exclude several categories of religion from their list of religions of origin.⁵

⁵ There are other problems. In Roof and Hadaway's Table 1, the percent "stayer" is reported for the broad category of *Protestant* as well as for the three subgroups of Protestant—Liberal Protestant, Moderate Protestant and Conservative Protestant—and for the distinct denominations which comprise these three subgroups. The number of individuals raised in the three subgroups in the table totals 2,952 compared with the total Protestant N of 3,330. The authors explain this difference by pointing out that they dumped several minor Protestant denominational members (presumably 378) into the total Protestant category. The three subgroups have percent stayer figures of 64.21%, 68%, and 74.3%, respec-

⁴ We will be dealing with Stark and Glock's nationwide data. They also look at switching among the respondents to a survey administered to church members in northern California.



Table 2. Mobility Matrix, Heads of Households 1975-76 NORC Data (%=% from Each Religion of Origin Category in Each Religion of Destination Category)

Religion at Age 16	Current Religion									
	High SES	Medium SES	Baptist	Low SES	Prot., No Denom.	Catholic	Jewish	Other	None	
High SES	<u>65.7%</u>	10.0	1.3	2.9	6.3	2.9	0	1.3	9.6	239
Medium SES	5.3	<u>67.1</u>	6.5	5.6	4.0	3.0	0.3	0.7	7.3	694
Baptist	3.2	7.1	<u>75.2</u>	3.1	3.1	1.9	0	0.3	6.1	622
Low SES	6.7	12.0	8.7	<u>55.3</u>	7.3	4.0	0	0	6.0	150
Prot., No Denom.	8.9	7.1	3.6	3.6	<u>57.1</u>	3.6	0	1.8	19.3	56
Catholic	1.6	3.4	1.3	1.3	0.7	<u>82.1</u>	0.1	0.3	9.2	758
Jewish	1.8	1.8	0	1.8	0	1.8	<u>81.8</u>	0	10.9	55
Other	0	0	0	0	0	15.0	0	<u>75.0</u>	10.0	20
None	6.3	20.0	9.5	6.3	4.2	5.3	0	1.1	47.4	95
	248	602	550	167	114	679	48	29	252	

The data they do report provide confirmation of the basic trends of Stark and Glock. Their Table 1 (1977:410) indicates net losses for Baptists and Catholics due to their inability to attract new members, and net gains for Episcopalians and Congregationalists due to their recruitment of new members, despite the fact that these latter, liberal denominations experience relatively heavy out-migration. (In addition to these basic data on switching, Roof and Hadaway analyze the relationship among the sex, age, and region of respondents and switching rates. Some of these data will be discussed in a later section of this paper.)

The results of the present analyses of the 1975 and 1976 NORC General Social Surveys are contained in Tables 2, 3, 4, and 5.

Table 2 presents the basic mobility matrix for the 1975-76 data, showing the out-flow percentages of individuals from the nine categories of religious origin into each category of religious destination.

Table 3 presents a summary of the mobility patterns of the nine religious

categories, including the percentage composition of each category who are lifelong members, and the percentage composition of the categories who are new converts or in-migrants.

Table 4 presents data on the expected vs. observed frequencies in the cells of the mobility table, calculated on the assumption of quasi-independence as developed by Goodman (1969a; 1969b) and others, and as applied in the mobility analyses of Blau and Duncan (1967), Featherman et al. (1973), and others. The assumption of quasi-mobility allows us to calculate expected values free from the distorting influence of the numbers of respondents in the diagonal or nonmobile cells. It has been shown (Goodman, 1969a) that the more usual calculation of expected frequencies under a basic assumption of simple independence (following the formula

$$E = \frac{m_i m_j}{n}$$

where m_i and m_j are the marginal frequencies associated with row i and column j), results in expected values which mirror diagonal values and distort interpretations of comparisons of these expected values with obtained or observed frequencies in the usual "mobility ratios." The assumption of quasi-mobility is that, ignoring those individuals who are not mobile (that is, those in the diagonal cells), the probabilities associated with destinations of the mobile individuals should be a simple combination of the probability effects of the rows and columns of origins and destinations. The pro-

tively. Yet the percent stayer for the total Protestant column (89% of which is the three subgroups) is 89.6%. Either the total Protestant figure, or the subgroup figures are evidently in error. Additionally, it would seem that the denominations into which the three Protestant subgroups are broken down would be exhaustive, as would be indicated by the fact that the denomination numbers in the column Religion in Which Raised do add up to the subgroup totals. But the numbers in the joiners and leavers columns do not add up to the totals for these columns for the subgroups.

Table 3. Indicators of Religious Stability and Mobility, Heads of Household, 1975-76 NORC Data

	Religion in Which Raised	Current Religion	Net Gain or Loss Due to Switchers	% Raised in Religion, Currently in Religion	% Current Religion Not Raised in Religion
High SES	239	248	+ 3.8%	66%	37%
Medium SES	694	602	- 13. %	67%	23%
Baptist	622	550	- 11.6%	75%	15%
Low SES	150	167	+ 11.3%	55%	50%
Prot., No Denom.	56	114	+104. %	57%	72%
Catholic	758	679	- 10.4%	82%	8%
Jewish	55	48	- 13. %	82%	6%
Other	20	29	+ 45. %	75%	48%
None	95	252	+165. %	47%	82%

cedure, in other words, uses only mobile individuals in the calculation of expected values. The ratios which result from the division of the observed frequencies to these expected frequencies tell us if respondents are over- or underrepresented in a destination category, based on a standard of independent distribution of the respondents from a particular origin category among the destination categories. The actual calculation of the expected frequencies in each nondiagonal cell followed the procedures outlined by Goodman (1969b: 847-9). The expected values, observed values, and "quasi-mobility ratios" are displayed in Table 4.

Table 5 presents the index of status persistence (Goodman, 1969b). This index is based on the assumptions of quasi-independence discussed above. It assumes that the same proportion of individuals from religion of origin j should flow into destination category j as would be predicted for individuals flowing into that destination category from any of the other (non- j) religions of origin. The actual formula for the index, as given by Goodman, is $\hat{G} = (\hat{A}_j - \hat{R}_j) / (1 - \hat{R}_j)$, where \hat{A}_j is

the observed proportion of individuals from j who flow into destination j , and where \hat{R}_j is the proportion of all nonstable individuals expected to flow into j , under the assumption of quasi-independence (Goodman, 1969b: 838). The numerator of the index subtracts the observed percentage in destination category j from origin category j , from the expected percentage in destination category j . The index then divides this number by the percentage of individuals *not* expected to flow into destination category j . Thus, the index reports the degree to which individuals flow into the same destination category as origin category, above and beyond the percentage expected, based on the assumption of quasi-independence.

It is apparent from Table 3 that the same basic trends identified by Stark and Glock appear in the 1975-76 data. Catholics, Baptists, and the Medium Status Protestant denominations are losing membership overall due to switching (that is, fewer respondents indicated a current affiliation with these groups than indicated that they had been raised in these religious groups). High Status Protestant denomination,

Table 4. Mobility Ratios, Expected to Observed Frequencies, under Assumption of Quasi-Independence, Heads of Household, 1975-76 NORC Data

Religion at Age 16	Current Religion						
	High SES	Medium SES	Baptist	Low SES	Prot., No Denom.	Catholic	None
High SES	—	1.14	.28	.74	1.7	.95	1.03
Medium SES	1.10	—	1.30	1.28	.99	.88	.70
Baptist	.99	1.08	—	1.04	1.12	.84	.88
Low SES	1.14	1.02	1.45	—	1.49	.97	.48
Prot., No Denom.	1.68	.67	.66	.74	—	.95	1.25
Catholic	.72	.77	.58	.66	.35	—	1.95
None	.79	1.24	1.15	.89	.62	.85	—

Table 5. Index of Status Persistence (G_j), by Religion of Origin, 1975-76 NORC Data, Heads of Household

High SES	.610
Medium SES	.567
Baptist	.718
Low SES	.498
Prot., No Denom.	.523
Catholic	.805
None	.299

Low Status Protestant denominations, the two areligious categories, and the *Other* category are gaining membership due to switching.

Again in these data, the Baptists and Catholics retain a high percentage of their membership. As can be seen, 75% of those interviewed who indicated having been raised in the Baptist faith were still Baptist, and 82% of those who reported having been raised Catholic were still Catholic at the time of the survey. These statistics are supported by the Goodman indices of status persistence, summarized in Table 5 (Baptist = .718, Catholic = .81). The index values show that Baptist and Catholics are very likely to keep their religion of origin, when compared with the rate at which non-Catholics and non-Baptists move into the two faiths.

Baptists and Catholics are not successful at attracting new members. About 15% of respondents who are currently Baptist come from another faith, and only 8.4% of respondents who are currently Catholic were not raised Catholic. Thus, the reason for the observed overall losses due to in-and out-mobility of these two faiths is that they apparently cannot attract sufficient numbers of new members to offset their losses.

The Medium Status religions have a similar pattern of in- and out-mobility. They retain fewer of their members (67%) and their current membership is composed of a greater percentage in-mobiles than the Baptist or Catholic faiths, but overall, as can be seen, the Medium Status religions have a net loss due to switching quite close to that of the Baptist and Catholics (-13%). The particular combination of heavy loss and some immigration from other religious groups yields a fairly low index of status persistence,

.567, which indicates that about 57% of expected movement of Methodists to other religions in fact is composed of stability within the Methodist religion.

The High and Low Status religious categories evidence a pattern of movement in which they lose a considerable percentage of their original membership, yet show a net gain due to switching because of their success at attracting new members. Note that about 37% of current High Status religions' affiliates came from other religions, and that fully 50% of those who indicate a current identification with the Low Status religions came from other religions of origin. As would be predicted, the indices of status persistence are relatively low for these two groups, .61 and .498, respectively.

It is the *No Religion* category which has the most spectacular growth pattern due to switching. Eighty-two percent of those who indicate no religious preference were raised in one of the other religious categories, and overall, 27.3% of all respondents who switched moved into the No Religion category (38.2% if we include those who switched into *Protestant, No Denomination*). This is the modal switching pattern evidenced in these data.

Table 4 gives us further insights into the relationships evidenced in the data. Note that, as would be expected, there is less movement from the Protestant denominations into the Catholic faith, and less movement into the Protestant denominations from the Catholic faith than we would expect under our assumptions. Importantly, note that the movement of those individuals raised Catholic into the No Religion category is much higher than expected (ratio = 1.95), a movement which in fact constitutes the highest mobility ratio in the entire mobility table. Catholics, in other words, are relatively stable except in their movement out of religion altogether.

The Low Status religions receive their new members disproportionately from the Baptists and Medium Status religious groups. It is interesting to note that the individuals raised in the High Status religious group move into the Medium Status group, but have less movement than ex-

pected into the Low and Baptist religious groupings (the low N's involved here make these ratios tentative).

Generally speaking, Table 4 is remarkable because of the lack of departure from the quasi-independence assumptions (i.e., ratios near unity), rather than for any demonstrable patterns of relationship in the choosing of one's destination religion. What this means, of course, is that those individuals who switch religions appear to distribute themselves among all of the possible destination religious categories in a fairly similar fashion, regardless of category of origin.

There are three additional patterns evidenced in these tables which warrant further discussion.

(1) Stark and Glock (1968:203) discussed the possibility that their data indicated an "up and out" trend in religious switching wherein lower status Protestants moved to higher status denominations, and High Status denominational members moved out of religion altogether. It is apparent from Table 4 that Protestants are overrepresented in movement to denominations of higher status, as can be seen by the generally positive ratios to the left of the diagonal for the second, third, and fourth rows. And, as can be seen, the High Status denominational members do not drop down to the Low Status and Baptist religions, and they move at a slightly higher than expected rate into the No Religion category. But, it is not a perfect picture of up and out mobility. Note that High Status members move into the Medium Status denominations, and that Medium Status denominational members and Baptists move into those denominations lower on the status scale.

(2) What accounts for the remarkable increase in measures of flow into the No Religion category, when we compare the 1975-76 data to those of Stark and Glock? There are a couple of possible explanations. It might be argued that the differences are a result of an increased willingness on the part of respondents to state publicly that they are not a member of a religious group. Thus, the 1970s might have ushered in an era in "truth in reporting" in religion, rather than an in-

creasingly secular era. This explanation, however, is at least partially countered by Wuthrow's (1976:858) compilation of various indicators (not just self-reports) of secularization, all of which show a decrease in religiosity in recent years. If the No Religion category's increase reflected only a change in reporting style, then we would expect little change in other indicators such as building expenses and contributions. Wuthrow's data contradict this.

So we may be left with the most obvious explanation for the measured increase in flow into the No Religion category: that it is a valid reflection of a general secularizing trend in our society. One theory of secularization, that of the demographic transition in age composition of the religious groups, will be discussed in some detail in a following section of this paper.

(3) Some researchers have attempted to deal with the difference between the gains and losses due to switching evidenced in religious mobility data and changes in membership figures over the years as reported by the various religious bodies. Stark and Glock (1968) spend a good deal of time discussing this apparent contradiction:

First of all, membership figures reported annually to the National Council of Churches have long shown that the conservative churches are growing faster than the moderate and liberal bodies. But our data suggest that the conservative bodies ought to account for a smaller proportion of church members each year. (1968:199)

But there is another apparent puzzle revealed by our findings. The trend to liberalism ought to be causing a considerable expansion in the size of the liberal and moderate denominations in terms of enrolled members at the congregation level. But this seems not to be happening. These bodies have not reported substantial increases in membership. (1968:203)

Stark and Glock discuss several possible explanations for these facts, centering around the unreliability of church membership statistics, the important difference between the denominational affiliation an individual states to a survey interviewer and a person's actual church membership,

and differentials in church membership (not affiliation) by denominations.

The membership patterns for the various religious groups in recent years are fairly clear. The Episcopalian Church, for example, has decreased from a membership figure of 3,429,153 in 1965 to a membership of 2,882,064 in 1976. The Southern Baptist denomination, on the other hand, has increased in membership over the same 11-year period from 10,770,573 to 12,917,992. Similarly, the Roman Catholic church has increased in membership from about 46 million to 49 million in 1976. (All of these figures are from Jacquet, 1978: 230-1.)

But this contradiction between the gains and losses due to switching, and gross membership changes in the religious categories need not be puzzling. There does not have to be a direct positive relationship between mobility into and out of various religious categories and the general rates of increase and decrease in these categories over time, because growth in a population unit in a time interval is due to several demographic processes, including both mobility and natural fertility and mortality trends.⁶ The data on gains and losses due to switching serve as an estimate of the difference between in-migration and out-migration for the population unit (i.e., the religious categories). Stark and Glock, in their 1968 chapter, look at the differences between this migration difference for the religious bodies and the overall growth figures, and attempt to find explanations for the fact that they were not correlated. The obvious reason for the differences, as we have been suggesting here, is that births and deaths are different for the various religious categories, and that these differential fertility and mortality rates (which Stark and Glock do not consider) account for a greater share of the variance of growth in the interval than do the migration differences.

There are some data to support this line of reasoning. Table 6 presents data on the average age of the nine religious

categories. As can be seen, the average age for Baptists, Low Status denominations, and Catholics is lower than the average for the other Protestant denominations. This age structure suggests the high fertility hypothesis has some validity, since low average age in an adult population indicates large numbers of individuals in child-bearing years and large cohorts of young people recently moved into adult ranks.⁷ Additionally, Baptists and Catholics retain a higher percent of their membership than do the other Protestant denominations. Thus, it may be that Baptists and Catholics have more children and retain a greater percent of these children than do the High and Medium Status denominations, and thus, the Baptists and Catholics show absolute increases in membership year in and year out, even though they are losing members overall due to switching. And, similarly, the High Status denominations, even though gaining slightly due to switching, experience gross losses in membership over time because of their high mortality and lack of fertility.

Finally, we should not lose sight of the fact that the gains and losses due to switching reflected in our data are processes potentially extending over a time span of about 75 years. Thus, it is very hazardous to compare these mobility figures with changes in membership estimates taken at precise points in time, because we have no accurate fix on the time periods involved in our reported mobility. As Duncan (1966) points out, retrospective indicators of Father's occupation and other characteristics (such as religion at age 16) cannot be used to construct estimates of specific previous cohorts or generations on these characteristics.

Summary

Several facts have been made clear by our examination of data on religious switching:

⁷ Other analyses show that Baptists, Catholics, and Low Status denominations report more children in the home at the time of the survey than the other groups. This could also support the idea that these groups grow because of internal production of new members.

⁶ As Matras (1977:113) indicates: "Growth in time interval = births in interval - deaths in interval + # of in-migrants - # of out-migrants."

Table 6. \bar{X} Age for Each Category of Religion of Origin by Religion of Destination, Basic Sample, 1975-76 NORC Data (Figures at Right Side and Bottom of Table Represent Row and Column Marginal Means, Respectively)

Religion at Age 16	Current Religion								
	High SES	Medium SES	Baptist	Low SES	Prot., No Denom.	Catholic	Jewish	Other	None
High SES	45.97 (173)	47.12 (26)	50.25 (12)	44.4 (18)	42.1 (10)	49.25 (12)		25.0 (2)	32.92 (24)
Medium SES	56.98 (52)	48.90 (540)	47.26 (47)	48.29 (38)	51.57 (23)	44.83 (36)	24.0 (1)	31.2 (5)	33.90 (42)
Baptist	52.72 (29)	48.19 (47)	43.96 (495)	44.46 (35)	49.55 (22)	41.33 (18)		25.0 (3)	35.83 (29)
Low SES	44.8 (10)	51.33 (21)	49.42 (19)	44.37 (91)	48.78 (9)	50.25 (8)			39.45 (11)
Prot., No Denom.	51.2 (5)	41.25 (4)	69.0 (5)	39.25 (4)	42.70 (33)	56.0 (2)			37.75 (9)
Catholic	43.8 (10)	48.58 (26)	44.08 (12)	42.56 (16)	37.0 (7)	42.88 (661)	37.0 (2)	29.5 (2)	33.81 (68)
Jewish		66.0 (1)	51.0 (1)	32.0 (1)		23.0 (1)	51.46 (96)		40.71 (7)
Other	46.0 (2)	38.0 (1)	28.0 (1)			43.67 (6)		36.0 (15)	61.00 (3)
None	37.88 (8)	43.53 (19)	36.0 (12)	37.29 (7)	43.5 (4)	60.83 (6)		22.0 (2)	30.15 (33)
	48.34	48.61	44.54	44.59	46.09	43.24	50.31	31.86	34.52

1. Only about 25 to 32% of the American population report current membership in a religious group (including areligious categories) other than the one in which they were raised.
2. The religious category which enjoys the greatest in-migration is the No Religion category. Fully 27.3% of all switching is composed of movement into this category, despite the fact that only 3.5% of the population report being raised in the category. Thirty-four percent of this movement into the no religion category is from the Catholic faith, by far the largest contributor, both in terms of raw numbers and in terms of expected values.
3. There is, as would be expected, less switching from Protestant to Catholic and from Catholic to Protestant religious groupings than would be expected under certain assumptions of an independent distribution of out-migrants from the various religious categories.
4. Baptist and Catholics retain high percentages of their members, but lose overall due to switching because they cannot attract significant numbers of new members.
5. The High and Low Status Protestant denominations lose much higher percentages of their membership, yet they gain overall due to switching because they have been very successful in attracting new members.
6. The midrange Protestant denominations lose members, and fail to attract enough new members to compensate for this out-migration.
7. The distinction between year-by-year changes in total membership of the religious categories, and the gains and losses due to switching must be emphasized. The relative losses and gains due to switching discussed in these pages do not necessarily imply an overall increase or decrease in the gross membership figures, because such membership changes can be due in large part to fertility and mortality trends.

EXPLANATION OF RELIGIOUS SWITCHING

Introduction

We can now turn to an examination of the *reasons* for the observed religious switching behavior, and ultimately to an investigation of what these reasons can tell us about the general functions of religion in our society.

It is useful here to distinguish between two types of functions of religion: the individual, personal, spiritual function and the organizational or social function.

Emphasis on the individual functions of religion suggests that the religious switch takes place because the individual seeks a new, different, or more personally meaningful theology, pattern of ritual, or style of ministry. (This type of explanation appeals to theologians and ministers who presumably like to assume a religiously rational, concerned and committed religious constituency.) The social or organizational emphasis assumes that religious affiliation implies association with a membership of a particular composition in a specific location and that the switch occurs because the individual desires to worship with or associate with certain types of people or in a specific location.⁸

The importance of these two emphases may vary for different categories of the mobile population. In particular, it may be that the social functions of the destination congregations or membership may be most important to the religiously upwardly mobile, and that the personalistic functions may be most important to the religiously downwardly mobile. This type of explanation is suggested by the work of Stark (1972), whose analyses support the idea that individuals at different socioeconomic levels use religion for different reasons.

We will look in this section primarily at

⁸ There are no doubt switches of "convenience" (e.g., on moving to a small town, the individual could find there is no Episcopalian church, and therefore moves to a Methodist affiliation), and switches due to religiously exogamous marriages. This latter explanation, which we will look at briefly in subsequent sections of this paper, involves some combination of other explanations for religious switching as the couple reaches a decision about affiliation with the two religions they bring to the marriage dyad.

social and organizational explanations for the religious switch.⁹ We have little data available on personalistic explanations (see Marty et al., 1968, for some limited responses to direct personalistic questions about the reasons for religious mobility) and the validity of such data, even if available, would be problematic.¹⁰

Socioeconomic Reasons for Religious Mobility

Introduction. The idea that socioeconomic status "causes" religious affiliation or behavior is related to two lines of thought in the sociology of religion. The classic discussions of the origins of denominations and sects (Niebuhr, 1929; Fallding, 1974) stress the fact that religious bodies develop to serve the needs of certain socioeconomically distinct groups in society. The second line of thought stresses the idea that *within* an already existing framework of denominations and religions, individuals might pick and choose a particular religious affiliation to go along with their education, occupation, or income. Within a Protestant framework of diverse but not radically distinct denominations in the United States, such a choice of "compatibility" in religious fellow worshippers can be accomplished without severe challenge to one's basic beliefs and upbringing.

The reasons for this need for status congruence between one's socioeconomic status and one's religious affiliation are straightforward. There are strong desires to associate with one's status peers as well as to accumulate the memberships, possessions and behaviors befitting one's socioeconomic station in life, presumably because of general principles of similarity and attraction and because of the need to certify to the public (as with clothes, cars, housing) one's attainments. Religious affiliation, we assume, can serve like other external status symbols as evidence of

one's socioeconomic position. Additionally, religious membership can be important for business and professional reasons, and for social contacts which can lead to other, non-religious, activities, associations and social networks of personal importance.

The actual theological *content* of denominations may vary in a manner which makes them more or less useful to groups of people at certain socioeconomic levels. Thus, the desire to shift to a religious affiliation with a compatible socioeconomic membership might reflect not only basic processes of status strivings, but also a desire to enjoy theology and preaching which, in Peter Berger's (1969) terms, "legitimate" or provide a "nomos" supportive of one's lifestyle, income, wealth, and outlook on life.

Past studies. Warren (1970) presented one of the first, although brief, analyses of the possible relationship between socioeconomic status and religious mobility. His data give some support to the hypothesis that individuals who switch religions may do so because of a desire to find a religious home more socioeconomically compatible than the religion in which they were raised. Warren's data and discussion, although dated, remain the best evidence available on the hypotheses under investigation, and as such stand as the baseline point for the current investigation.

Alston (1971) analyzes data obtained from a 1955 Gallup Poll. His main findings are that there are no significant differences between the average educational and occupational attainments of the groups of religiously nonmobile and mobile respondents. These results say nothing about the *social mobility* of his respondents, yet Alston states:

There are no statistically significant differences between the mobiles and non-mobiles in terms of education, occupation and age. This suggests that mobility is not associated with social mobility, since the two samples have similar educational and occupational profiles. (1971: 143-4)

In summary, religious mobility in 1955 was associated with only a limited amount of social mobility. . . . (1971: 148)

⁹ We will briefly look at age as a factor in the switch, and age can be considered to be related to some varieties of personalistic explanation.

¹⁰ Nisbett and Wilson (1977) argue that *any* self-report on the reasons for one's behavior is of doubtful accuracy.

This conclusion cannot be sustained by Alston's data, which as noted, deal only with *current* educational and occupational levels. There are a variety of ways in which there could have been actual differences in occupational mobility between the two categories of religious mobility as classified by Alston, yet which would not be evident in the data as presented.

Even if Alston's conclusions about the social *mobility* of his respondents are discounted, we need to examine the potential significance of his data as presented for other hypotheses concerning religious mobility and socioeconomic status (not mobility). Alston's presentations allow us to examine the relationship between switching per se or the lack thereof, and socioeconomic variables. If this switching per se is seen as the dependent variable (that is, as a result of occupational and educational status levels, not occupational mobility), then its theoretical relevance is unspecified. The only reasonable hypothesis along these lines would be that certain levels of social status lead to a general anxiety or desire to switch a variety of things, and that religious change might be one of them. Alston makes no mention of such a hypothesis, and its general relevance to the present concerns is doubtful. If religious switching per se is seen as the independent variable (that is, the cause of socioeconomic attainments), then we encounter methodological problems, since it has been well established that the effects of mobility as an independent variable are difficult to determine unless one has information on both the status of origin and the status of destination of the individuals involved (Duncan, 1966; Hodges, 1970; Hawkes, 1972). It first must be assumed that the apparent effects of mobility may be the simple result of the mobile individuals' statuses of origin and destination; and these assumptions must be discounted before the researcher can begin to analyze the presumed effect of mobility per se. Alston's data, again, allow for no such investigations.

Lauer (1975) makes similar logical errors in his analysis of data obtained from a telephone survey in a small midwestern community. All of his analytical procedures deal with categories of occupation-

ally mobile and nonmobile individuals, not with their statuses of origin or destination, about which no information is provided. Lauer (1975:387) reports finding no significant relationship between occupational mobility and religious mobility, and a weak relationship between *degree* of occupational mobility (within the group of occupationally mobile individuals) and religious mobility:

While no relationship exists between occupational and religious mobility per se, a high degree of occupational mobility increases the likelihood and possibly the pattern of religious mobility.

But, again, the interpretation of these relationships between categories of occupationally mobile and nonmobile individuals and religious mobility is difficult. The demonstrated relationships can be due to a variety of combinations of effects of average positioning on origin and destination occupational statuses, plus the possible effects of mobility per se. One cannot assume that they are due to mobility alone. Lauer concludes, for example, that individuals occupationally mobile across 5-9 categories are more likely to be religiously mobile than individuals occupationally mobile across 1-4 categories (see Lauer's Table 3). It is not too unreasonable to suggest that all of the respondents in the 5-9 category mobility group may have originated in either extremely high socioeconomic status categories or extremely low occupational status categories (depending on whether the mobility was up or down). And, it may be that starting life in one of these two extreme categories, *regardless of the extent of later occupational mobility*, may cause one to be religiously mobile, and starting life in one of the other less extreme categories, *regardless of the extent of later occupational mobility*, may cause one to be less religiously mobile. Thus, the statuses of origin alone of these occupationally mobile individuals well might have been the cause of the significant differences in religious mobility, a pattern of relationships which would make Lauer's (1975:387) conclusion that "... a high degree of occupational mobility increases the likelihood and possibly the patterns of religious mobility" incorrect.

Table 7. \bar{X} Income for Each Category of Religion of Origin by Religion of Destination, Heads of Household, 1975-76 NORC Data

Religion at Age 16	Current Religion								
	High SES	Medium SES	Baptist	Low SES	Prot., No Denom.	Catholic	Jewish	Other	None
High SES	<u>18,429</u> (148)	10,727 (21)	6,000 (2)	7,214 (7)	16,785 (14)	18,714 (7)		14,000 (3)	16,130 (23)
Medium SES	19,544 (34)	<u>12,730</u> (442)	12,337 (43)	9,486 (37)	11,129 (27)	18,500 (21)	6,500 (1)	9,300 (5)	14,312 (48)
Baptist	19,184 (19)	15,272 (44)	<u>11,585</u> (438)	4,852 (17)	11,210 (19)	16,875 (12)		11,000 (2)	13,000 (37)
Low SES	22,777 (9)	14,083 (18)	9,083 (12)	<u>9,811</u> (77)	16,850 (10)	15,083 (6)			10,222 (9)
Prot., No Denom.	9,700 (5)	20,625 (5)	35,000 (1)	19,750 (2)	<u>14,466</u> (30)	8,500 (2)		9,000 (1)	19,937 (8)
Catholic	19,636 (11)	17,140 (25)	12,950 (10)	7,600 (10)	10,000 (5)	<u>14,411</u> (581)	22,500 (1)	9,000 (2)	16,082 (67)
Jewish	35,000 (1)	6,500 (1)		9,000 (1)			<u>22,219</u> (41)		18,083 (6)
Other						17,500 (3)		<u>18,200</u> (15)	12,250 (2)
None	16,666 (6)	14,333 (18)	13,500 (9)	11,625 (4)	12,375 (4)	8,700 (5)		17,500 (1)	<u>9,558</u> (43)

Nelson and Snizek (1976) hypothesize that the basic relationship between occupational and religious mobility will vary by the urban-rural residence of the respondent. The authors use data obtained in a 1960 Presidential Election Survey, presented in a manner which crudely differentiates the *type* or form of occupational mobility or stability (i.e., white-collar stable, blue-collar stable, white-collar mobile and so forth). Their data suggest that there is a relationship between occupational mobility and religious mobility, and that this relationship is different for urban and rural categories of respondents, but Nelson and Snizek's analyses do not allow us to make very conclusive assumptions about these relationships. Their data need to be reanalyzed in a fashion which allows for differentiation to be made between category of occupation of origin and category of occupation of destination.

Analyses of the 1975-76 data. One test of the possible socioeconomic basis for religious switching is the comparison of the current socioeconomic status (SES) of religious switchers with the levels of stable members of both the origin and destination religions of these switchers (see Warren, 1970:145-9). If switching is independent of socioeconomic status,

switchers should be socioeconomically similar to others raised in their religion of origin. But, if individuals who switch religions do so in order to find socioeconomic compatibility between their SES and the SES of their destination religion, then we would predict a degree of correspondence between the switchers' own SES and average SES of the members of their destination religion, and differences between the switcher's SES and the SES of their religion of origin.

These assumptions can be tested by examining Tables 7, 8, and 9. Each table lists the average income, occupational prestige, or education for the group of individuals who have each possible combination of religion of origin and religion of destination. The underlined figures on the diagonal represent the averages of the three SES indicators for the religiously stable individuals, and serve as the primary benchmark for comparison in utilizing the tables.¹¹

¹¹ It should be noted that in the 1975-76 data set, there are no data on the precise point in the individual's career at which he or she switched religions. Thus, even a strong relationship between current socioeconomic status and the status level of destination religion members does not *necessarily* indicate that the switch itself was made for socioeconomic reasons. In particular, if the switcher chose the destination religion at a very early age, it might be re-

Table 8. \bar{X} Occupational Prestige¹ for Each Category of Religion of Origin by Religion of Destination, Heads of Household, 1975-76 NORC Data

Religion at Age 16	Current Religion								
	High SES	Medium SES	Baptist	Low SES	Prot., No Denom.	Catholic	Jewish	Other	None
High SES	44.4 (151)	43.8 (24)	33.0 (3)	23.9 (7)	45.4 (14)	46.3 (7)		44.7 (3)	45.3 (21)
Medium SES	48.14 (37)	39.6 (457)	40.02 (41)	34.03 (39)	40.9 (28)	40.1 (21)	41.0 (2)	44.0 (4)	39.7 (48)
Baptist	44.95 (20)	40.6 (42)	36.3 (456)	30.3 (18)	42.5 (19)	38.5 (12)		30.0 (2)	38.4 (37)
Low SES	45.7 (10)	39.7 (18)	38.4 (13)	33.6 (80)	39.8 (11)	36.3 (6)			42.0 (9)
Prot., No Denom.	36.8 (5)	40.3 (4)	45.5 (2)	37.5 (2)	42.9 (31)	43.0 (2)		23.0 (1)	38.0 (8)
Catholic	45.0 (12)	44.2 (36)	34.1 (10)	32.2 (10)	44.6 (5)	39.2 (595)	43.0 (1)	24.5 (2)	41.0 (69)
Jewish	41.0 (1)	32.0 (1)		26.0 (1)		33.0 (1)	51.3 (41)		48.8 (6)
Other						47.7 (3)		45.9 (15)	40.5 (2)
None	45.0 (6)	43.2 (18)	42.1 (9)	34.7 (6)	33.75 (4)	39.2 (5)		51.0 (1)	37.3 (41)

¹ Hodge-Siegel-Rossi Occupational Prestige scores. See ICPSR 1975; 1976.

The best way to examine each table is by looking across the rows. Baptists still in the Baptist religion at the time of the survey (stable Baptists), for example, have an average income of \$11,585. It can be seen that the individuals raised Baptist who have moved into high status denominations have an average income of \$19,184. And finally, note that the average income of the stable high SES religious group members is \$18,429. Thus, the switchers out of the Baptist denomination into the High Status denomination have average income levels much closer to the average income of the destination religion members than to the average income of the religion which they abandoned.

As can be seen, the same types of

trends are evident for all three of the socioeconomic status indicators. Switchers into the High Status Protestant denominations have consistently higher SES averages than the stable members of their origin religions.

If people are moving into the fundamentalist and Low Status religions (including perhaps the Baptist denomination) for reasons other than socioeconomic compatibility, then we would expect to find their average SES closer to the members of their religion of origin, than to the members of their religion of destination. But this is apparently not the case. The switchers who moved out of the High, Medium and Baptist denominations into the Low Status denominations have SES values much closer to the average SES of the Low Status denomination than their religions of origin. Thus, these figures are compatible with the hypothesis that switchers to Low Status denominations move in order to seek SES compatibility.

Note that those individuals who move to the No Religion category do not have particularly unusual status characteristics when compared with their religion of origin. This suggests that there are factors other than socioeconomic status which account for the decision to move to the No Religion self-placement.

sponsible for, rather than as a result of, later socioeconomic achievement. However, even such an early switch may have been a result of a form of "anticipatory socialization" into a desired or planned socioeconomic status, and thus would be congruent with the general notion of the compatibility between socioeconomic levels and one's religion. The major exception may be those instances where an individual switches purely because of the religion of his or her spouse, and later, due either to the spouse or to the religion, achieves socioeconomically at a level similar to those of the members of the destination religion. The influence of the spouse on religious switching will be investigated in a later section of this paper.

Table 9. \bar{X} Education for Each Category of Religion of Origin by Religion of Destination, Heads of Household, 1975-76 NORC Data

Religion at Age 16	Current Religion								
	High SES	Medium SES	Baptist	Low SES	Prot., No Denom.	Catholic	Jewish	Other	None
High SES	13.3 (157)	12.7 (24)	10.7 (3)	9.0 (7)	13.8 (15)	14.9 (7)		13.3 (3)	14.2 (23)
Medium SES	14.1 (37)	11.9 (462)	11.8 (45)	11.0 (39)	12.04 (28)	12.05 (21)	15.5 (2)	12.8 (5)	13.0 (51)
Baptist	13.6 (20)	11.9 (44)	10.55 (465)	7.5 (17)	12.3 (19)	12.3 (12)		11.5 (2)	12.03 (38)
Low SES	13.1 (10)	11.5 (18)	9.5 (13)	10.98 (83)	12.3 (11)	11.0 (6)			12.9 (9)
Prot., No Denom.	12.8 (5)	11.0 (4)	15.0 (2)	10.5 (2)	11.84 (32)	9.5 (2)		12.0 (1)	12.155 (8)
Catholic	13.0 (12)	11.6 (26)	10.9 (10)	9.1 (10)	13.6 (5)	11.97 (620)	13.0 (1)	16.0 (2)	13.5 (70)
Jewish	17.0 (1)	8.0 (1)		17.0 (1)		8.0 (1)	14.02 (44)		15.3 (6)
Other						14.0 (3)		14.4 (15)	10.5 (2)
None	13.8 (6)	12.6 (19)	11.9 (9)	9.7 (6)	10.75 (4)	12.2 (5)		16.0 (1)	11.56 (45)

The interpretation of these tables can be facilitated if we can create an index¹² which reflects the position of each switcher's status relative to the status of the members of his or her religion of origin, and relative to the status of the members of the religion of destination:

$$\text{INDEX VALUE} = \left[\begin{array}{l} \text{SWITCHER'S STATUS LEVEL} \\ - \\ \bar{X} \text{ OF STABLE MEMBERS OF ORIGIN RELIGIOUS STATUS} \end{array} \right] - \left[\begin{array}{l} \text{SWITCHER'S STATUS LEVEL} \\ - \\ \bar{X} \text{ OF STABLE MEMBERS OF DESTINATION RELIGIOUS STATUS} \end{array} \right]$$

A positive index value indicates that the difference between the switcher's status and the average status of his or her religion of origin (stable members) is greater than the difference between his or her status and the average status of his or her religion of destination, giving some support for the socioeconomic hypothesis. If there is no relationship between religious mobility and socioeconomic status, we would expect negative values, since the

individuals who move out of an origin religion should not differ systematically from those who stay (given, of course, the assumption that members of denominations in general are socioeconomically homogeneous). Note that an index value of zero for an individual would indicate that he or she was about halfway between the statuses of the origin and destination religions.

The average values for the index for each of the three statuses, listed by *destination religion* of the switchers, are given in Table 10. The average of \$578, for

Table 10. Socioeconomic Index of Difference between Switcher's Status and \bar{X} Status Levels of Religions of Origin and Destination, for Religiously Mobile Heads of Household, 1975-76 NORC Data, Listed by Religion of Destination

	Occupational		
	Income	Prestige	Education
High SES	\$ 578.	1.8	.38
Medium SES	357.	.4	.27
Baptist	223.	.2	-.3
Low SES	1,544.	2.3	.1
Prot., No Denom.	-117.	.3	.07
Catholic	-412.	-.3	.16
Jewish	-841.	-3.7	-1.4
Other	-1,698.	-1.1	-0.65
None	- 691.	-0.2	-0.13

¹² David L. Morgan suggested the use of this type of index.

example, for switchers into the High Status denominations, indicates that switchers were 578 dollars farther away from their religion of origin status level than they were from their religion of destination status level (i.e., they were, on the average, closer to the status of their destination religion than their origin religion).

It can be seen that positive index values for income result for switchers into the four Protestant denominations, but that negative index values result for switchers into Catholicism, the Jewish faith, the two areligious categories, and the Other category. These negative numbers suggest that income is *not* a primary explanatory factor in the shift to these religious groupings.

The same general pattern holds for occupational prestige. Note that the relationship between prestige of switcher and the average prestige of destination members is particularly strong for those moving into the High and Low Status categories. The index values for education are somewhat different: Switchers into the Baptist category are slightly more similar to their religion of origin educational status than the average education of stable Baptists. And, in a pattern unlike that evidenced for the other two indicators, switchers into the Catholic faith are closer in education to Catholics than to the members of their origin religion categories.

In general, the findings in Tables 6 through 10 indicate that movement to various Protestant denominations is congruent with what would be expected if

socioeconomic status is an important factor in the move, and that movement to the other five religious categories is more likely to be based on other factors.

We can check these conclusions in a somewhat different fashion by analyzing the contributions that each of the religion variables (religion of origin and religion of destination) make towards explaining the variance in the three socioeconomic indicators, for switchers only. Presumably, if the religious switch is not made for socioeconomic reasons, the religion of origin of switchers will be significantly related to their socioeconomic status. We would also predict under this null hypothesis of no relationship between socioeconomic status and religious mobility that the SES of switchers would be randomly distributed among the religion of destination choices, and that, as a result, knowledge of a switcher's religion of destination would not help us predict his or her current socioeconomic status. Note that these procedures are different from the previous analyses which utilized information on the stable members of the religious groupings. Here we are dealing only with the simpler question of a relationship between the choice of a religion of destination for a religious switcher and that switcher's socioeconomic status.

The analysis of variance procedures used here check these hypotheses by analyzing each of the two main effects after the effect of the other independent variable has been taken into account. The results are displayed in Table 11 and show significant main effects for current religion

Table 11. Analysis of Variance of Socioeconomic Indicators, by Religion of Origin and Religion of Destination, Religiously Mobile Heads of Household, 1975-76 NORC Data

	Sums of Squares	DF	F	Significance
<i>Income</i>				
Religion of Destination	5973233664.	8	8.908	<0.001
Religion of Origin	641730304.	8	0.957	0.469
Interaction	3935563520.	40	1.174	0.218
Residual	670515072.	665		
<i>Education</i>				
Religion of Destination	942.	8	10.678	<0.001
Religion of Origin	214.	8	2.427	0.014
Interaction	479.	41	1.06	0.373
Residual	7677.	696		
<i>Occupational Prestige</i>				
Religion of Destination	9525.	8	6.71	<0.001
Religion of Origin	1253.	8	0.88	0.53
Interaction	4815.	41	0.662	0.949
Residual	1208308.	681		

Table 12. Zero-Order Correlations between Socioeconomic Status Indicators and \bar{X} Status of Destination Religion for Religiously Mobile Heads of Households, 1975-76 NORC Data

	Total Sample of Switchers (444)	Urban Residents (281)	Rural Residents (159)	South (139)	Non-South (302)
Education	.317 ¹	.306	.298 ²	.374	.263 ³
Occupational Status	.276 ¹	.277	.253 ²	.312	.257 ³
Income	.292 ¹	.278	.281 ²	.303	.277 ³

¹ Significantly greater than zero ($p < .01$).² Difference between r 's for urban and rural residents not significant ($p > .05$).³ Difference between r 's for South and Non-South residents not significant ($p > .05$).

of switchers for all three statuses, and significant effects of religion of origin only for education. The significant main effects of current religion indicate that knowledge of the destination religion of a switcher helps explain variance in the socioeconomic status of that individual; i.e., that switchers are socioeconomically differentiable by their destination religion. This supports the hypothesis of a relationship between religious mobility and socioeconomic status.

An additional way of summarizing the relationships between switchers' socioeconomic levels and the socioeconomic levels of their destination religions is with correlation coefficients. Categories can be coded according to the average educational, occupational prestige, and income levels of their *stable members*. The relevant socioeconomic status level of religious switchers then can be correlated with the destination religion of these switchers, coded by stable members' SES levels. The resulting statistics give an indication of the relative strength of association between a switcher's status and the status of the stable members of his or her destination religion. The calculated correlation coefficients and related statistics are reported in Table 12, for the three socioeconomic statuses.¹³ As can be seen, the correlation coefficients for each of the three relationships (education, occupational prestige, and income) are positive and of moderate strength (all of these relationships are statistically significant at the .01 level). Thus, as we would predict from the tables we already have exam-

ined, there is a positive relationship between the status levels of switchers, and the average status of the membership of these switchers' destination religions.

We can predict differences by subgroups in our sample. We can assume that rural residents might be under more pressure than urban residents to bring their religious affiliations in line with their socioeconomic status (see Nelson and Snizek, 1976; Roof, 1976). The relative *gemeinschaft* existence in rural communities, wherein all aspects of an individual's life are known to all of his or her fellow residents, would suggest these pressures towards status consistency. The relative *gesellschaft* nature of urban existence, on the other hand, might suggest that an individual could maintain a religious affiliation whose socioeconomic characteristics were disparate from the individual's socioeconomic status, without suffering from the pressures of inconsistent evaluations. Similarly, in line with research which supports the idea of a southern "culture" independent of most confounding variables (Middleton, 1976), we might predict that the socioeconomic status-religious affiliation congruence would be stronger in southern states than in nonsouthern states. Both of these hypotheses have been tested in Table 12.¹⁴

As can be seen, the biggest differences occur between the southern residents and those residents of the rest of the United States, particularly in the relationships between educational level of the switches

¹³ Switching to *nonreligious* categories were excluded from data used in the calculation of these coefficients.

¹⁴ Urban dwellers are those individuals who report living within a Census Bureau defined SMSA, while southern dwellers are those who live in the South Atlantic, East South Central and West South Central regions of the United States as defined by official Census Bureau classifications.

Table 13. Religious Mobility for Each Category of Occupation of Origin and Current Occupation, Males and Unmarried Female Respondents (Excluding Widows), 1975-76 NORC Data

Occupational Category of Father	Current Occupational Category					
	Upper White-Collar	Lower White-Collar	Upper Blue-Collar	Lower Blue-Collar	Farm	
Upper White-Collar	7% 72% (116)	5% 69% (42)	4% 64% (28)	2% 70% (43)	0 67% (3)	5%
Lower White-Collar	10% 58% (31)	4% 72% (25)	8% 85% (13)	6% 67% (18)	0 0 (0)	7%
Upper Blue-Collar	10% 69% (77)	12% 71% (49)	4% 71% (84)	5% 72% (83)	0 0 (4)	7%
Lower Blue-Collar	10% 71% (69)	4% 74% (47)	10% 65% (69)	4% 73% (157)	0 100% (2)	7%
Farm	17% 61% (46) 10%	22% 72% (18) 8%	12% 72% (58) 8%	4% 79% (81) 4%	9% 76% (54) 8%	11%

Note: Top percent figure represents religiously upwardly mobile; middle percent figure represents percent religiously stable; bottom figure represents N of cell. Figures at right side and bottom of table represent row and column marginal percentages upwardly mobile, respectively.

and the educational levels of the destination religions, although all differences are statistically insignificant.

We turn briefly now to a more direct examination of the relationship between upward social *mobility* and religious mobility. We must limit our analyses here to male and single female respondents, since we have no information on the parent's occupation status of the spouses of respondents, and since we assume it is the husband's occupational mobility in these data (particularly for older respondents) which defines the household's status and which would therefore be expected to be related to the religious shift.

Respondents and their fathers' occupations were categorized into five categories (see Knoke, 1973: 1452): upper nonmanual (professional, technical and kindred, business and managerial); lower nonmanual (clerical, sales and kindred); upper manual (craftsmen, foremen and kindred); lower manual (operatives, service workers and laborers, except farm and mine); and farm (farmers and farm laborers).

Religious mobility of the respondents was developed into a five category scale: religiously upwardly mobile; religiously stable; religiously downwardly mobile;

other mobility; and mobility into the No Religion category.¹⁵

Table 13 displays the frequency distributions for this religious mobility variable for each combination of occupation of origin (defined as father's occupational status) and respondents' occupation at the time of the survey.

It is apparent that individuals occupationally upwardly mobile are more likely to have been religiously mobile than individuals either occupationally stable, or occupationally downwardly mobile. Note for example that the average percent religiously upwardly mobile for all respondents raised upper manual is about 7%. Yet the 126 of these individuals who were mobile into the nonmanual occupational

¹⁵ The Upward Religious Mobility category included those who switched into the High Status denominations from any other religious group, those who switched into the Medium Status denomination from any religious group other than High Status group, and those who switched into the Baptist category from the Low Status denominations. The Downward Religious Mobility category included those who switched into the Medium Status denominations from the High Status denominations, and those who switched to the Baptist denomination from the High or Medium Status denominations, and those who switched into the Low Status denominations from the High, Medium or Baptist denominations. The other category included all other switches.

categories were between 10% and 12% religiously mobile. The same patterns obtain for the other ten cells of occupationally mobile individuals, which, with one exception, display religiously upward mobility percentages higher than we would predict from an examination of the relevant occupation of origin marginal percentages. Interpretation of the grouped or averaged percentages by mobility category must be interpreted with caution and with the type of examination of row and column effects discussed above. As can be seen, the upward mobility factor for occupationally mobile individuals is about 10%, for stable and downwardly occupationally mobile individuals, about 5¼% to 5½%.

Marriage. An explanation for religious switching which is testable using the 1975-76 data concerns religiously heterogamous or potentially religiously heterogamous marriages and the resulting switch of one partner to the religion of the other (see Warren's illuminating discussion, 1970: 143-151). In instances where only one partner has switched religion, it can be quickly determined using our 1975-76 data whether or not the switching spouse moved to the stable religion of nonswitching partner.

All married switchers were included in this analysis (the basic sample was used, not Head of Households). There were, as can be seen from Figure 1, 279 male married switchers and 310 female married switchers (78% of the total of 756 switchers). These were further divided into subgroups according to the ultimate homogamy of the married couples' religions at the time of the survey.

If switchers change religions in order to move into the religion of their spouse, then we would predict a large percent of married switchers to (1) have stable spouses, and (2) be in the same religion as that stable spouse. As can be seen, 41% of all female married switchers and 39% of all male married switchers in fact met these requirements of having moved into the religion of the stable spouse.

It is interesting to note that 36.9% of male switchers and 41.6% of female switchers had spouses who also switched.

Most of those double switching couples moved into the same destination religious categories (82% of male and 72% of female married respondents). Finally, as can be seen, 29% and 28% of male and female switchers, respectively, ended up in different categories from their spouse (most of these, further analysis indicates, were situations in which the switcher moved into the No Religion category).

It should be reemphasized that even this act of switching to a stable spouse's religion does not preclude the possibility that the switch had something to do with socioeconomic (or other) factors. As Warren (1970) points out, the decision of a spouse to hold firm in his or her religious beliefs and for the other spouse to switch to this religion may be based on the socioeconomic composition of the ultimate destination religion. This would be particularly true if a type of "anticipatory" mobility process were at work in which couples at marriage began to make decisions based on plans for future socioeconomic positioning.

Age. One variable reasonably related to the religious shift might be the age of the individual involved. Age should not be considered an exogenous explanatory variable in and of itself, but it presumably stands for, and provides a mechanism for isolating, processes which have affected certain groups of individuals. In general, if we find differences in a dependent variable by age groupings in one cross-sectional sample, they either reflect the fact that the particular cohort sampled lived through some unique historical circumstances (such as the Depression for those 55 and older; World War II for those 45 and older; or the Vietnam years for those individuals now 25 to 35) or they can reflect the fact that all individuals pass through certain stages at certain time-specific points in their lives.

Wuthrow (1976) argues that changes in religious behavior and affiliations in recent years, specifically the increasing rate of apostasy, are a reflection of the former process: a specific generational circumstance which affected individuals growing up in the 1960s, but which is not necessarily a process which has affected or will

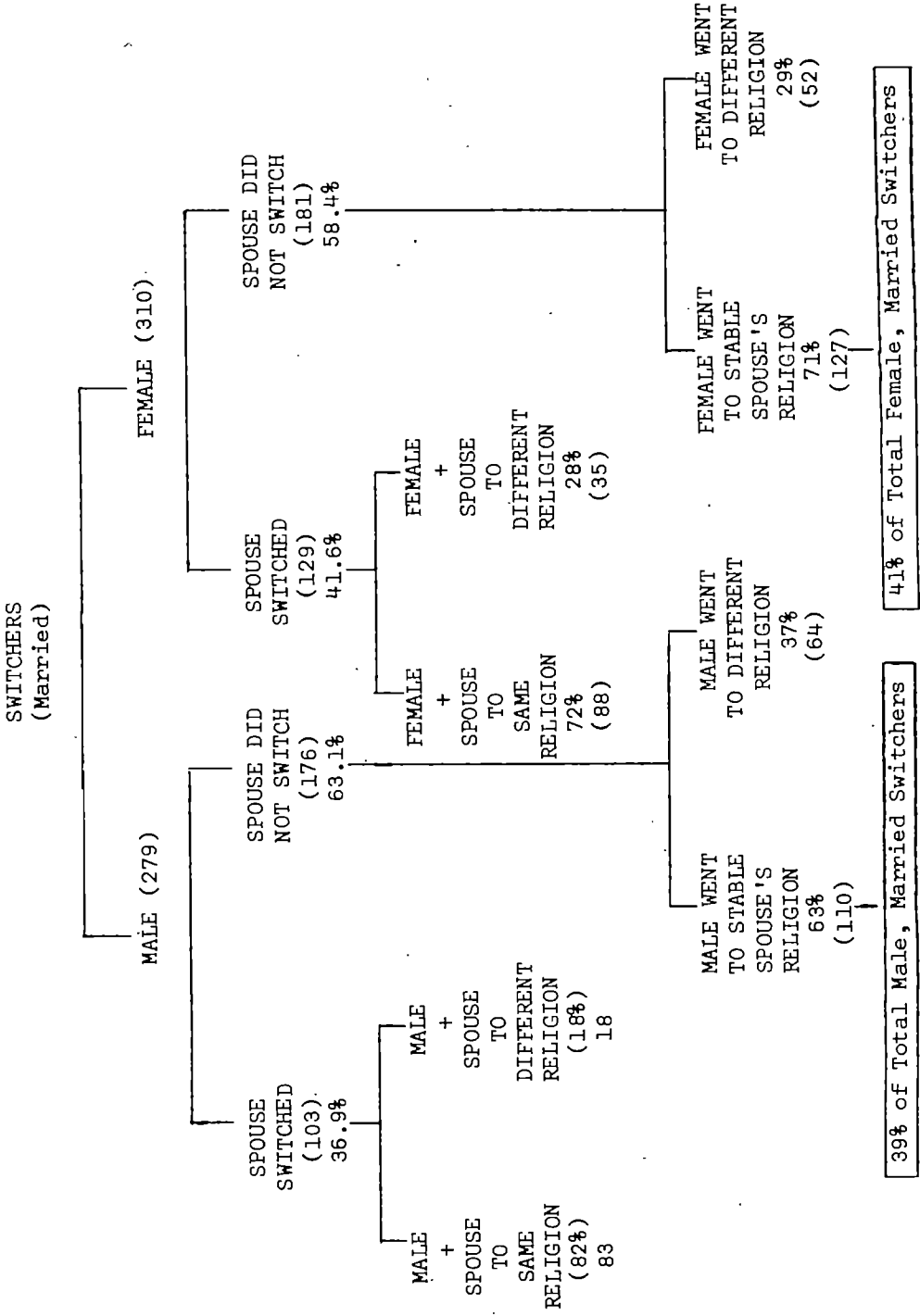


Figure 1. Breakdown of Relationship between Religion of Switcher and Religion and Mobility of Spouse, Religiously Mobile Sample, 1975-76
NORC Data.

affect every cohort of young individuals (1976: 861-3). Wuthrow's discussion would be useful in explaining the contradiction between Stark and Glock's data on mobility into the No Religion category, collected in 1965, and the data we have analyzed from 1975-76. We found a high degree of immobility to the No Religion category, while Stark and Glock found little evidence of such a trend. If Wuthrow is correct, these data could reflect the fact that Stark and Glock did not have significant members of the 1960s "countercultural" generation in their data set, and the 1975-76 data set did.

What do the 1975-76 data tell us about age? Table 6 presents the mean age for each subgroup created by the intersection of the religions of origin with the religions of destination, for the 1975-76 data. It is apparent that we find support for the trend documented by Wuthrow, and by Roof and Hadaway (1977: 411). The mean age of every group of individuals who have switched into the No Religion category is younger than the age of the religions of origin of these individuals. As can be seen from the column means, the No Religion category thus has the lowest mean age of any of the nine religious categories of destination. This age difference suggests that the group of switchers to No Religion is disproportionately composed of young people.

It is interesting to speculate about the future of this group of individuals (i.e., those now in the No Religion category). If their apostasy is a generational phenomenon (Wuthrow, 1976: 862), then we might predict that it would follow them throughout their life cycle, with the result that a significant percentage of population samples taken over the next 50 years will remain in this No Religion category. But, it could be argued that this apostasy effect, while occurring to a specific generation, may still be subject to some age specific patterns, and that as these individuals move into their thirties and have families and children, we will find them returning to religion. This would result in a rather dramatic decrease in the No Religion category over the next years, assuming that the cohort coming of age in the 1970s will not experience a similar generational

countercultural effect which will drive them from the churches like their brothers and sisters of the 1960s. Future data will resolve these issues.

DISCUSSION

What are the implications of these data for the study of religion in America and the general attempt to arrive at theories of the relationship between religion and society? First, it is important to note that while the data show some fluidity in religious affiliation in the United States, there is really not as much mobility as we might expect. Recall that of the approximately 30% of those surveyed in 1975-76 who switched religions, about 38% had moved out of the religious system altogether. This leaves only about 18.6% of all Americans surveyed who have effected a move from one religion to another religion. And of this movement, fully 61% is intra-Protestant, as opposed to movement among the major religious groupings (Catholic, Jew, Protestant, and other). Overall, then, it is actually a rather small percentage of Americans who change from one religion to another during their lifetimes, which means that the best single predictor of an individual adult's religious preference is still the simple knowledge of his or her parent's religion.

These data on the relative stability of our religious affiliations from generation to generation lead to interesting interpretations. It is clear that we do not live in a nation of sects, with voluntary membership produced by conscious, within-generation changes. We live instead in a nation of church-like religious groupings in which membership is largely a between-generational hand-me-down, produced from within. From at least one perspective, this stability is not very encouraging, and is not particularly a state of affairs which we are happy to accept, as Skinner (1953:9) has noted:

Though we observe that Moslem children in general become Moslem while Christian children in general become Christians, we are not willing to accept an accident of birth as a basis for belief. We dismiss those who disagree with us as victims of ignorance, but we regard the promotion of our own religious

beliefs as something more than the arrangement of a particular environment.

Political scientists long have used data on the intergenerational stability of political party preference as evidence of the failure of the American electorate to be individually and rationally concerned with candidates and issues involved in elections. Similarly, one could conclude pessimistically that the present evidence argues against the notion that Americans pick and choose their religious affiliation on the basis of some well-thought-out and *theologically* based criteria.

From another perspective, however, this stability of religion across generations does not necessarily reflect a total absence of theological contemplation. No religion can operate in a social vacuum. A religion serves the personal and social needs of its members. Adherents to a religion have social and economic positions within their society, and pressures exist which cause individual's social positionings to be congruent with both the theology and the organizational facets of their religion. Thus, to the extent that children inherit their parents' social and economic characteristics, we would assume that their parents' religious affiliation would continue to be useful. And the recognition of this usefulness, and the resulting decision to remain in one's parents' religion, could occur not just by default, but from a conscious, thoughtful consideration of religion and its role in one's life. It could be, in other words, that some children remain in their parents' religion *precisely* as a result of careful deliberation in which they conclude that what is good for their parents is good for them, for the same reasons.

This second perspective leads us to predict that the religious needs of the individual will not be as well met if the individual has a social and economic status different from that of his or her parents' and thus different from that of the church in which the individual had been raised. The data reviewed in this paper, as we have seen, give support to this notion. Those who switch settle in religions which match their currently reported socioeconomic status more closely than did the socioeconomic characteristics of the reli-

gions which they left. And there is some evidence to support the idea that upward socioeconomic mobility is related to upward religious mobility. We have no data on the precise point in the switcher's life cycle when the switch is made, as we pointed out, so we have no conclusive evidence that the switch was made into a denomination which matched some already achieved status. It could be that the shift caused the socioeconomic status level differential. Nevertheless, the correlational evidence is support for the general idea of the importance of the relationship between socioeconomic status and religious affiliation, and for the idea that changes in status may lead to changes in religion.

A healthy percentage (40%) of married switchers moved to the religious affiliation of their stable spouse, data which support the idea of the importance of marriage in the decision to shift. But we are still left with the necessity of determining the basis for choosing one spouse's religion over the other. Presumably, as we noted, this decision could be based on socioeconomic (or other) grounds.

The data on age support what is becoming the conventional wisdom: the movement out of religion altogether is to a large degree a function of age. The average switcher to the No Religion category was considerably younger than the average age of the members of his or her religion of origin. We will have to wait for future years' analyses to see if this will be a recurring generational phenomenon of the young, or if it is a phenomenon which belongs specifically to a generation of young people who came of age in the 1960s.

Some of our data contradict commonly held notions about the process of religious change in this country. In particular, it is obvious that despite appearances to the contrary, Baptists are growing as a religious group in spite of the fact that they are not converting new members at a high enough rate to replace departing members. Similarly, the High Status denominations are losing ground overall despite the fact that they enjoy a positive net migration factor. Only in the ranks of the Medium Status denominations (most par-

ticularly the Methodists) do we find support in the data for the concerns of these church members and leaders over their shrinking numbers: they are losing membership due to negative migration factors.

As we noted at the outset of this paper, we have not directly investigated what might seem the most obvious reasons of all for the religious shift: conscious, rational, theological decisions. And, as we also noted, we have not looked at specific, localized factors no doubt somewhat important in the shift: the geographic locations of a church, specific congregations and their particular appeals, specific ministers, and other particularistic factors which would not be measured in a survey of the types used in these investigations.

A central question which remains when we ponder future research on the religious switcher is the potential usefulness and validity of survey research and/or intensive interview methods in which respondents are asked directly why they changed religions. This method would seemingly be a more obvious way of establishing explanations for religious mobility than the indirect method used in this paper of ascertaining relationships between religious mobility and other, presumably explanatory sociological variables of interest.

An example of such direct interrogation available in the literature is the Catholic Digest survey of Marty et al. (1968: 304-6). Individuals were asked: "How did you happen to change [religions]?" The respondents chose one of the following answers: "Took the religion of my husband or wife," "Moved to where my denomination had no church," "Liked religious beliefs of another church better," "Influence of friends, relatives, etc.," "Found religious beliefs of former church unsatisfactory," "Disagreeable experience with clergyman," and "All other reasons." Fully 50% of the respondents who had changed religions chose the first two of these explanations for their shift. How useful is this information? One major determination of the switch, socioeconomic factors, is not even listed among the responses. The reason for this may be that individuals do not have unique access to the reasons for their switch (or for any of their own behaviors) and/or that they

tend to give socially acceptable reasons when forced to make an explanatory comment on their behavior (Nisbett and Wilson, 1977). The validity of such self-reports are problematic until shown otherwise. Future research on the religious switch should perhaps move in this direction, but with a healthy regard for the possible invalidity of such self-diagnoses.

REFERENCES

- Alston, Jon
1971 "Religious mobility and socioeconomic status." *Sociological Analysis* 32:140-8.
- Berger, Peter L.
1969 *The Sacred Canopy: Elements of a Sociological Theory of Religion*. Garden City: Anchor Books.
- Blau, Peter and Otis Dudley Duncan
1967 *The American Occupational Structure*. New York: Wiley.
- Duncan, Otis Dudley
1966 "Methodological issues in the analysis of social mobility." Pp. 51-97 in Neil J. Smelser and Seymour M. Lipset (eds.), *Social Structure and Mobility in Economic Development*. Chicago: Aldine.
- Fallding, Harold
1974 *The Sociology of Religion*. Toronto: McGraw-Hill Ryerson.
- Featherman, David L., F. L. Jones and R. M. Hauser
1973 "Assumptions of social mobility research in the United States: the case of occupational status." *Social Science Research* 4: 329-60.
- Goodman, Leo
1969a "How to ransack social mobility tables and other kinds of cross-classification tables." *American Journal of Sociology* 75: 1-40.
1969b "On the measurement of social mobility: an index of status persistence." *American Sociological Review* 34: 831-49.
- Hawkes, Roland
1972 "Some methodological problems in explaining social mobility." *American Sociological Review* 37: 294-300.
- Hodge, Robert W.
1970 "Social integration, psychological well-being, and their socioeconomic correlates." Pp. 182-206 in E. O. Laumann (ed.), *Social Stratification: Theory and Research*. Indianapolis: Bobbs-Merrill.
- Inter-University Consortium for Political Research
1975 *National Data Program for the Social Sciences Spring 1975 General Social Survey*. Ann Arbor: Institute for Social Research of the University of Michigan.
1976 *National Data Program for the Social Sciences Spring 1976 General Social Survey*. Ann Arbor: Institute for Social Research of the University of Michigan.
- Jacquet, Constant H.
1978 *Yearbook of American and Canadian Churches 1978*. Nashville: Abington.

- Knoke, David
1973 "Intergenerational occupational mobility and the political party preferences of American men." *American Journal of Sociology* 78: 1448-68.
- Lauer, Robert H.
1975 "Occupational and religious mobility in a small city." *Sociological Quarterly* 16: 380-92.
- Marty, Martin, S. E. Rosenberg, and A. M. Greeley
1968 *What Do We Believe? The Stance of Religion in America*. New York: Meredith Press.
- Matras, Judah
1977 *Introduction to Population*. Englewood Cliffs: Prentice-Hall.
- Middleton, Russell
1976 "Regional differences in prejudice." *American Sociological Review* 41: 94-116.
- Nelson, Hart M. and William E. Snizek
1976 "Musical pews: rural and urban models of occupational and religious mobility." *Sociology and Social Research* 60: 279-89.
- Niebuhr, H. Richard
1929 *The Social Sources of Denominationalism*. New York: World Publishing.
- Nisbett, Richard and T. Wilson
1977 "Telling more than we can know: verbal reports on mental processes." *Psychological Review* 84: 231-59.
- Roof, Wade C.
1976 "Traditional religion in contemporary society: a theory of local-cosmopolitan plausibility." *American Sociological Review* 41: 195-208.
- Roof, Wade C. and Christopher K. Hadaway
1977 "Shifts in religious preference—the mid-seventies." *Journal for the Scientific Study of Religion* 16: 409-12.
- Skinner, B. F.
1953 *Science and Human Behavior*. New York: Free Press.
- Stark, Rodney
1972 "The economics of piety: religious commitment and social class." Pp. 483-503 in G. W. Thielbar and S. D. Feldman (eds.), *Issues in Social Inequality*. Boston: Little, Brown.
- Stark, Rodney and Charles Glock
1968 *American Piety: The Nature of Religious Commitment*. Berkeley: University of California Press.
- Warren, Bruce
1970 "Socioeconomic achievement and religion: the American case." Pp. 130-55 in E. O. Laumann (ed.), *Social Stratification: Theory and Research*. Indianapolis: Bobbs-Merrill.
- Wuthrow, Robert
1976 "Recent patterns of secularization: a problem of generations?" *American Sociological Review* 41: 850-67.

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Robin M. Williams, Jr., Department of Sociology, Cornell University, Ithaca, New York 14853.

THE SOCIAL ORGANIZATION OF THE AMERICAN BUSINESS ELITE AND PARTICIPATION OF CORPORATION DIRECTORS IN THE GOVERNANCE OF AMERICAN INSTITUTIONS*

MICHAEL USEEM

Boston University

American Sociological Review 1979, Vol. 44 (August):553-572

Recent analysis suggests that the American business elite is differentiated along an "inner group" axis. At one end of the axis are those business people who are primary owners or top managers of several major corporations, collectively labeled the *inner group*, while at the other end are those who are connected with only a single major corporation. It is reasoned that, by virtue of their multiple corporate connections and the resulting transcendence of parochial corporate interests, inner group members would be more often involved in the governance of other institutions than would be other members of the business elite. Institutional governance includes the occupancy of top administrative posts and governing and advisory board positions of three types of institutions: nonprofit, nongovernment organizations, such as economic development and cultural organizations; local, state, and federal agencies; and major business policy associations. Drawing on a set of 2,003 directors of the nation's largest 797 corporations in 1969, and on director biographical information acquired from several sources, this study found that inner group members are substantially more likely, compared with other members of the business elite, to be involved directly in the governance of a range of institutions. Moreover, available evidence also indicates that the higher participation rate of inner group members is at least partly a result of their capacity to mobilize greater corporate resources and their involvement in a common, transcorporate social network. The evidence presented tentatively supports the thesis that the American business elite is differentiated along an inner group axis, at least with respect to the selection of business people to assist in the governance of other institutions. The inner group may be an important source of political leadership capable of promoting the more general interests of the entire capitalist class.

If American business has successfully penetrated the economies of many societies abroad, it has been no less successful in penetrating noneconomic institutions at home. Governing boards of museums, high-level government offices, and public agency advisory panels are filled with businesspeople, though rarely is their dominance complete. Studies of

the occupants of the governing circles of nearly all American institutions, whether public or private nonprofit, invariably reveal that the surest career for entry into such circles is corporate management. The largest single occupational grouping is virtually always business, with the professions a close second; all other occupations, comprising the vast majority of the U.S. labor force, divide among them the few remaining positions.¹

While the business presence in governing positions is unimpressive to some observers who view it as largely symbolic, for others it is a crucial datum, indicative of capitalist control of both private and

* Direct all communications to Michael Useem; Department of Sociology; Boston University; Boston, MA 02215.

Of great value for this analysis were the efforts of a number of people in acquiring data on the U.S. business elite and their generous willingness to make the data available. For the names of the corporate directors used in the present analysis, I would like to thank Joel Levine, Peter Mariolis, and Michael Schwartz; for business policy association membership information, I am appreciative to Paul Blakely, Phillip Bonacich, G. William Domhoff, and Ben Smith. Gladys Delp and Linda Trenholm provided invaluable research assistance, and the U.S. National Science Foundation provided financial support (grant number SOC77-06658). I would also like to thank Howard Aldrich, Jerome Karabel, S. M. Miller, and two anonymous reviewers for helpful suggestions. An earlier version of this paper was presented at a 1978 conference sponsored by the European Group for Organizational Studies, and

special thanks are due to Elina Almasy, Jane Marceau, and Richard Whitley.

¹ For examples of studies reporting the occupational composition of those occupying top administrative positions and serving on governing boards for public and private nonprofit organizations, see Freitag (1975) for top federal government appointees, Hartnett (1969) for college and university governing boards, DiMaggio and Useem (1978) for arts organization governing bodies, and Landau (1977) for hospital trustees.

public life. Domhoff's (1970) "higher circles," composed chiefly of corporate executives, primary owners, and their descendants, constitute, in his view, "the governing class in America," for these businesspeople and their families dominate the top positions and governing boards of foundations, universities, and federal agencies. Drawing on studies of the social origins and prior occupations of government officials, Miliband (1969:47) reaches a similar conclusion. While granting that there does exist a "plurality of economic elites in advanced capitalist societies," he nonetheless finds that

"elite pluralism" does not . . . prevent the separate elites in capitalist society from constituting a dominant economic class, possessed of a high degree of cohesion and solidarity, with common interests and common purposes which far transcend their specific differences and disagreements.

This thesis of business dominance of the government has been challenged, of course, by many analysts who reject not only the political significance attributed to the dominance by businesspeople of positions of governance, but also the presumed class unity upon which the businesspeople's influence allegedly rests. Illustrative of this counterinterpretation is Daniel Bell's (1961:62-3) thesis that the disintegration of family capitalism in America has thwarted the emergence of a national "ruling class." He contends, for instance, that "there are relatively few political issues on which the managerial elite is united" now, since "in the last seventy-five years the established relations between the system of property and family . . . have broken down." The consequence has been a "breakup of 'family capitalism,' which has been the social cement of the bourgeois class system." Upon reviewing more recent evidence, Berg and Zald (1978:137) argue similarly that "businessmen are decreasingly a coherent and self-sufficient autonomous elite; increasingly business leaders are differentiated by their heterogeneous interests and find it difficult to weld themselves into a solidified group."

While these two perspectives presume radically different roles for the businesspeople who do serve in governing

positions with public and private institutions, there is at least agreement that businesspeople are disproportionately present. Yet both approaches provide little detailed guidance regarding the question of which businesspeople actually assume the leading roles in the governance of these institutions. This can be attributed, in part, to the relative lack of attention in both perspectives to the internal social organization of the capitalist class. Class organization deserves special attention, however, since it can have a decisive bearing on which businesspeople come to assume roles as "spokespersons" for business. And, since businesspeople vary in the kinds of policies they would urge on other institutions given the opportunity, the type of businesspeople who do acquire leadership positions can have implications for the actual policies adopted and, ultimately, the business interests promoted.

Building on recent analyses of the internal social organization of the American capitalist class, this paper proposes that the businesspeople most likely to become involved in the governance of other institutions occupy a distinctive class "location," and new evidence is presented to test the validity of this thesis.

THE SOCIAL ORGANIZATION OF THE CAPITALIST CLASS

The *capitalist class* consists of those who are the primary owners and top managers of major business firms; in this paper it will be used interchangeably with *business elite*. The use of the latter term is purely a matter of linguistic convenience, and it does not connote that the analysis is rooted in an "elitist" theoretical framework. The social organization of the capitalist class, or business elite, consists of the formal and informal networks of economic and social relations among the corporate owners and managers. *Institutional governance* refers to the occupancy of positions with high influence in, or formal authority over, public and nonprofit private institutions, such as government agencies, schools, and foundations. Positions of influence or authority include governing boards, advisory boards, and top administrative posts.

The social organization of the business elite is most likely to be determined by the nature of the formal business roles occupied by elite members (e.g., officer, primary owner, or director) and characteristics of the firm with which the position is associated (e.g., the firm's size and product). Other factors, such as government taxation policies and regulation of the securities market, also impinge on elite social organization; and the organization itself possesses a degree of autonomy, allowing for evolution according to its own internal dynamics. Nevertheless, the critical determinant is the structure of the economy, and, thus, the social organization of the business elite should be closely related to the divisions, alliances, and interdependencies among and within the major business firms in American society.

One of the most significant elements of economic organization with implications for class social organization is the sharing of directors by several major corporations. Boards of directors are legally and formally responsible for the operation of a firm and the protection of owner interests (they are elected by the shareholders; Bacon, 1967; Zald, 1969). Boards vary in size from three to more than 30 seats, though typically they include from 10 to 15 members. Frequently, seats on two or even more boards of directors are occupied by the same person. In 1969, for instance, 8,632 individuals served as directors of the nation's largest 797 financial and nonfinancial corporations, and nearly one-fifth (1,572) of these were "interlocking" directors, serving simultaneously on the boards of at least two of the corporations (Mariolis, 1975:433). The reasons for the establishment of these interfirm ties have been the subject of considerable analysis, but the origins of the interlocking directorate need not concern us directly here (see Dooley, 1969; Mace, 1971; Burch, 1972; Pfeffer, 1972; 1974; Allen, 1974; Bearden et al., 1975; Koenig et al., 1976; Sonquist and Koenig, 1976; Bunting, 1976). What is of significance for the present argument is that members of the business elite who sit on several boards of directors are placed in a unique position compared with other

members of the elite who are responsible for the operation of only a single firm. Interlocking directors are in a position to recognize—and help reconcile—the problems of several firms, often operating in very different environments.

Interlocking directors constitute a major part of a broader segment of the capitalist class that, following Zeitlin et al. (1974), we will label an *inner group*. The inner group consists of members of the business elite who have significant "connections" with at least several major corporations. Significant connections are those which involve the capacity to shape corporate policy, and include substantial ownership in a firm, service as a director or officer, and close kinship with those holding the former connections. The inner group is not limited to interlocking directors, but interlocking directors do constitute a critical component and we will focus on them here. "Inner group" is a metaphor and the boundary between it and the remainder of the capitalist class is not sharp. Indeed, it is more appropriate to think of its members not as a distinct group at all, but rather as clustered near the end of a continuous differentiating axis within the capitalist class. This axis of *inner group centrality* ranges from those who are connected with a single major firm to those with two connections, three connections, and at the far end of the axis, many connections.

PREVIOUS RESEARCH ON THE INNER GROUP

A fully elaborated analysis of the social organization of the American business elite and the structure of the inner group is not available, but elements of such a formulation have appeared in a number of studies. Outlines of the inner group thesis even date back to Mills's (1956) *Power Elite*. A major premise of Mills's analysis is that American capitalism is marked by increasing centralization and concentration. This process, in Mills's view, has led to the emergence of a new breed of corporate executives committed to industry-wide concerns and not simply the interests of their own firm. Moreover, a fraction of these executives take an even broader

view of business problems: "They move from the industrial point of interest and outlook to the interests and outlook of the class of all big corporate property as a whole" (Mills, 1956: 121). Mills identifies two features of business organization which are primarily responsible for this transition in outlook. First, the investments of a small circle of top managers and owners have become dispersed among a number of firms. As a result, "the executives and owners who are in and of and for this propertied class cannot merely push the narrow interests of each property; their interests become engaged by the whole corporate class" (Mills, 1956: 121). Second, the emergence of an extensive network of interlocking directorships among the major corporations has also meant that a number of managers have assumed responsibility for the prosperity of several corporations, and thus those holding several directorships constitute "a more sophisticated executive elite which now possesses a certain autonomy from any specific property interest. Its power is the power . . . of class-wide property" (Mills, 1956: 122).

Features of the inner group thesis can also be found in Maurice Zeitlin's (1974; 1976) more recent assessment of theory and research on the American capitalist class. Centralizing tendencies akin to those discussed by Mills are, Zeitlin tentatively suggests, generating an overarching unity within the business elite, and prominent among these forces is "the establishment of an effective organizational apparatus of interlocking directorates" cutting across both financial and industrial sectors. This apparatus may be an important ingredient in the heightening of "the cohesiveness of the capitalist class and its capacity for common action and unified policies" (Zeitlin, 1974: 1112). The national network of owners and managers with diverse corporate investments and positions is viewed by both Mills and Zeitlin as a progressive force in the capitalist class; and one which is increasingly in a position to impose its policies on the remainder of the class. The growing concentration of economic power in this network also has been discerned by a recent Congressional Study of corpora-

tion interlocks; indeed it anticipates that the "interlocking management device" could lead to a situation in which "inordinate control over the major part of the U.S. commerce would be concentrated in the hands of [a] few individuals," resulting in the possibility that "an 'inner group' would control the destiny of American commerce" (U.S. Congress, 1965:225-6).

A dominant theme in these examinations of the American business elite is the special role played by the top managers and primary owners with multifirm connections. Capitalists with ties to several, often disparate companies necessarily become concerned with the joint welfare of all the companies, and these concerns may come to coalesce with the general welfare of a broad spectrum of companies and their owners and managers. "Even more than other large corporation executives," suggest Zeitlin et al. (1974: 4),

those who sit at the center of the web of interlocking directorates must have an outlook and execute policies that, while yet serving particular and more narrow interests, conform to the general interests of the corporate community and of the principal owners of capital within it.

The inner group, in short, may constitute a special segment of the capitalist class, if a *class segment* can be defined as a subset of class members sharing a social location with partially distinct interests. Though the common concern with capital accumulation unites the inner group with the remainder of the capitalist class, at the same time the inner group's greater stake in class-wide interests sets it apart.

There is already some systematic evidence to enhance our confidence that the inner group does, indeed, constitute a distinct class segment. As a consequence of the divergence of the secondary interests of the inner group from those of the remainder of the class, members of this class segment can be expected to evolve partially distinctive ideologies, social circles, and patterns of intergenerational reproduction. Though the methodologies and setting vary widely, available studies reveal that the inner group does exhibit at least some of the traits expected of a separate class segment: those with multiple-firm connections, compared with other

members of the business elite, tend to be descendents of business elite families (Soref, 1976), individually wealthy or members of wealthy families (Zeitlin et al., 1974; Useem, 1978a), mutually acquainted (Perrucci and Pilisuk, 1970; Higley et al., 1976: 231-9; Koch and Labovitz, 1976), members of exclusive metropolitan social clubs (Koenig et al., 1976; Soref, 1976; Useem, 1978a), and influential in the affairs of local community organizations and in some colleges and universities (Perrucci and Pilisuk, 1970; Koch and Labovitz, 1976; Ratcliff et al., 1979; Useem, 1978a; 1978b).

THE INNER GROUP AND INSTITUTIONAL GOVERNANCE

A distinctive political role for the inner group is expected as well. While the political activity of a class segment can take many forms, this investigation will concentrate on a single political element (and, thus, our discussion is largely restricted to it). We will focus on the rate of business participation in institutional governance. It is hypothesized that the inner group will be substantially overrepresented, compared with other class members, in positions with direct influence on the policies of other institutions. The inner group's higher degree of political engagement is anticipated for several reasons.

First, the multiple corporate connections of inner group members tend to foster the formation of informal transcorporate networks. The heightened visibility associated with involvement in these networks should make inner group members more likely candidates for openings on governing boards and advisory bodies. The multiple corporate connections also place inner group members in an exceptionally good position to help mobilize the resources of many firms on behalf of policies they favor—and institutions whose governance they assist—making inner group members preferable to other businessmen when appointments to positions of governance are decided.

Second, inner group members also are expected to be especially prominent in institutional governance because of the integrative position the inner group holds

within the capitalist class. Like other social classes, this class contains major economic cleavages that can generate sharply opposed views on the policies most appropriate for other institutions to pursue. Certain federal government policies, for instance, may benefit large firms at the expense of smaller firms, banks at the expense of industrials, and certain sectors, such as oil or military goods, at the expense of others. These divisions over secondary economic interests can engender conflicts that potentially threaten the primary economic interests shared by all corporations. By virtue of their connections with several corporations and their involvement in a network of those associated with still other corporations, inner group members are uniquely situated to identify the policies that would foster the more general interests of many, if not most, major corporations. Thus, inner group members may constitute attractive "compromise" candidates when various segments of the capitalist class compete over who among their ranks would be appropriate business leaders. From the standpoint of the outside institutions as well, the capacity of the inner group to transcend the parochial interest of specific firms and sectors makes inner group members especially suitable business representatives.

Third, by virtue of their stronger connection with the primary holders of corporate ownership, inner group members are also more likely to be promoted for governance positions. Evidence from both the U.S. and Chile indicates that, compared with other members of the business elite, those holding multiple corporate directorships are more likely to be primary owners themselves or members of extended families with widespread holdings (Villarejo, 1962; Burch, 1972; Zeitlin et al., 1974; Soref, 1976; Useem, 1978a). The reasons for this intertwining of position and ownership need not be entered into here, but one consequence is that inner group members who are not themselves primary owners are especially likely to receive primary owner political backing. And, to the extent that primary owners, both those who also serve as multiple directors and those who do not, exercise

disproportionate influence on decisions within the corporate community because of their dominant wealth position, their support and power should further heighten the probability that inner group members become overrepresented on the rosters of institutional governance.

While previous studies have not explicitly examined the role of the inner group in American institutional governance, research on the occupants of top federal positions consistently reveals that they are over-drawn from the ranks of directors and executives of the largest corporations (Mills, 1956; Miliband, 1969; Kolko, 1969; Domhoff, 1970; Mintz, 1975; Freitag, 1975; Dye, 1976). Many of the directors and executives of major companies hold multifirm connections, and it is possible that these findings largely reflect disproportionate recruitment of inner group members, rather than members of the business elite per se, into top government positions. This question has not been directly addressed in previous empirical work on the U.S. (see Zeitlin et al., 1976, for empirical work on a related question in Chile), however, and it will be the primary focus of the present inquiry.

In sum, then, prior research suggests that the inner group does constitute a distinctive segment of the capitalist class, and it has been argued here that the position of the inner group in the social organization of the class is likely to lead its members to take a particularly active role in institutional governance. It is expected, therefore, that interlocking directors will more often occupy oversight positions in public and private nonprofit institutions than will other members of the business elite.

RESEARCH DATA

The business elite selected for analysis consists of those who were directors of the 797 largest U.S. corporations in 1969. The largest firms were those identified by the standard and generally accepted annual ranking conducted by *Fortune* magazine. The firms were ranked in seven groups: 500 largest industrials and 50 largest retail corporations (ranked by sales); 50 largest commercial banks, 50

largest life insurance companies, and 50 largest utilities (ranked by assets); 50 largest transportation companies (ranked by operating revenues); and 47 other large firms not readily classed within the previous groups (*Fortune*, May, 1970). Investment banks and privately held firms are not included on the list, and it is undoubtedly further flawed by the omission of still other firms. Nonetheless, the list is reasonably complete and most large American firms are included.

The identities of the 8,623 directors of the 797 corporations were compiled by Michael Schwartz and Peter Mariolis from standard sources (primarily Standard and Poor's *Register of Corporations, Directors, and Executives*). Interlocking directors are defined as those individuals who hold two or more directorships among the 797 firms. Many of the directors were also directors of smaller companies not appearing on the *Fortune* list, and this definition obviously undercounts the number of companies with which the directors are connected. Since our analysis will revolve around internal comparisons of the directors, however, this limitation will not seriously affect the results, though the precise details would probably differ if based on a complete list of all major U.S. firms and their directors.

Two or more directorships of the top 797 firms were held by 1,570 individuals; 61.1% serve on two boards, 21.5% serve on three, and 17.4% hold four or more directorships (one person held 11 positions, the maximum observed). For comparative purposes, an additional sample of 433 directors affiliated with only a single firm were selected randomly from the remaining list of single directors of the 797 corporations (a one-in-twenty sample).

Information on the role of the directors in institutional governance was obtained from three sources. Standard biographical data on 58% of the directors was obtained from the 1976-77 edition of *Who's Who in America*. Information on the service of the directors on federal government advisory committees was obtained from a complete listing of membership for 1976 prepared by a U.S. Senate subcommittee. This committee compiled the names of more than 23,000 individuals who served

on all 1,159 federal advisory committees, commissions, boards, councils and other panels in existence on the last day of 1976. Among the advisory committees included are the National Industrial Energy Council of the Commerce Department, the Defense Industry Advisory Group for Europe of the Defense Department, and the National Advisory Committee on Banking Policies and Practices of the Treasury Department. But also included are committees with more modest purviews, such as the Commerce Department's Advisory Committee on Fire Training and the Defense Department's Advisory Group on Utilization of Gravimetric Data (U.S. Senate Committee on Government Affairs, 1977). Finally, information on the involvement of the directors in a set of exclusive social clubs and major business policy associations were obtained from lists compiled by Phillip Bonacich and G. William Domhoff (1977). They obtained membership lists for 20 prominent metropolitan social clubs and sixteen major business policy organizations from the period between 1965 and 1971. Links, Pacific Union, and Metropolitan appear among the clubs included; the Committee for Economic Development, Council on Foreign Relations, Business Council, the Conference Board, and the Business Roundtable are among the business policy groups.²

² The data on clubs and business associations originally were organized to permit interorganizational network analysis (as reported in Bonacich and Domhoff, 1977), and only the names of those people who were members of at least two of these organizations were available for the present analysis. Not all of the clubs and associations examined by Bonacich and Domhoff included at least some of our directors on their membership rosters. The business policy associations and exclusive social clubs that did count at least one of our directors among their numbers (and each of these directors must have been a member of at least two of the organizations) are as follows; the number of directors affiliated with each is identified in the parentheses:

Advertising Council (13);
American Assembly (4);
Brookings Institution (7);
Business Council (52);
Business Roundtable (11);
Committee for Economic Development (35);
Conference Board (10);
Council on Foreign Relations (45);

The primary measure of inner group centrality for the 2,003 corporate directors studied here is the number of directorships each held in the top 797 firms in 1969. Though as many as 11 directorships were managed by one individual, the number of people holding multiple directorships is a sharply diminishing function of the number of directorships maintained, especially after the level of four directorships is reached. To ensure adequate numbers for reliable analysis, those with four or more directorships are classed together, and the directors are then divided into four groups arranged along the axis of inner group centrality, ranging from one seat on a corporate board to four or more positions.

The occupational profile and age of the four director groups are quite similar. The director's occupational position in 1969 (obtained from *Who's Who*) is considered here in three categories: executive of one of the top 797 firms; executive of other corporations; and all other occupations.³

Farm Foundation (1);
Foundation for American Agriculture (2);
National Association of Manufacturers (5);
National Planning Association (1);
Arlington Club, Portland, Oregon (1);
Bohemian Club, San Francisco (9);
Boston Club, New Orleans (1);
California Club, Los Angeles (4);
Century Association, New York (8);
Chevy Chase Club, Chevy Chase, Maryland (11);
Chicago Club, Chicago (15);
Detroit Club, Detroit (2);
Duquense Club, Pittsburgh (1);
Federal City, Washington, D.C. (6);
Harmonie Club, New York (1);
Links Club, New York (37);
Metropolitan, Washington, D.C. (46);
Pacific Union Club, San Francisco (26);
Piedmont Driving Club, Atlanta (1);
Somerset Club, Boston (2).

The requirement that each of our directors appear on the membership rosters of at least two of the organizations results, of course, in a sharp underestimate of the complete membership of the directors, since those with only a single membership are not counted. In this paper, membership in a given number of business policy associations refers to the number within the present data set, not the true number of memberships, which, in an unknown number of cases, will be one larger than the number reported here.

³ A director was considered to be an executive of a firm if he or she listed his or her primary position with the firm as any of the following: chairman of the board, vice-chairman of the board, president, chief

Table 1. Percentage of Directors Who Are Business Executives, and Mean Age of Directors in 1969, by Number of Directorships Held by Directors

Number of directorships held by director	Executive position ^a				Mean age (years)	(No. of cases)
	Top firm ^b	Other firm	Any firm	(No. of cases)		
One	46.8%	31.2	78.0	(160)	56.1	(154)
Two	46.5%	32.1	78.6	(565)	57.5	(551)
Three	47.9%	29.1	77.0	(240)	57.7	(229)
Four or more	56.5%	23.5	80.0	(195)	58.7	(186)
All directors	48.5%	29.9	78.4	(1,160)	57.5	(1,120)

^a See fn. 3 for definition of executive position.

^b Top firms consist of the 797 largest corporations from which the directors are drawn. Other firms consist of all other corporations. Any firms include both top and other corporations.

The occupational distribution of the directors, broken down by the number of directorships held, is displayed in Table 1. It is seen that, regardless of the number of directorships held, approximately half of the directors are also executives of a top firm; the percentages range from 47 for *single directors* to 57 for *multiple directors* (those with four or more directorships). More than three-quarters of all four groups are executives with either a top or other corporation (the percentages vary from 77 for the triple directors to 80 for the multiple directors). Thus, inner group centrality is unrelated to whether a director is also a corporate executive, though there is a modest tendency for higher centrality to be associated with a position among the top firms. Inner group centrality also demonstrates virtually no relationship to director age; the overall average is 57.5 years in 1969, and the average for each of the four groups deviates by less than 1.5 years from this overall mean.

In interpreting the results that follow, it should be cautioned that parts of the analysis are based on only the 1,160 directors for whom *Who's Who* information is available. Comparison of these directors with the 843 who are not listed in this biographical directory reveals that the listed directors are more prominent. For instance, multiple directors more frequently appear in *Who's Who* than do single directors (71 vs. 37%); directors who are members of two or more business

policy associations appear more often than those who are members of no associations (81 vs. 55%); and directors who are members of two or more exclusive social clubs are more frequently listed than those who are affiliated with no clubs (68 vs. 55%). Thus, analyses based on the *Who's Who* directors are of a more prominent sector of the business elite than are analyses based on all directors.

Three areas of institutional governance are considered. First, involvement of the corporate directors as trustees, directors, or governors of eight types of nongovernment, nonprofit institutions is examined. Then, we turn to the role of the directors as advisors to local and federal government agencies. Finally, the directors' involvement in business policy associations is considered.

PARTICIPATION IN THE GOVERNANCE OF NONGOVERNMENTAL, NONPROFIT INSTITUTIONS

Seven types of nongovernment, nonprofit organizations are distinguished: (1) regional, community, or economic development organizations; (2) cultural organizations (e.g., art museums, symphony orchestras); (3) research and scientific organizations (e.g., research institutes); (4) philanthropic foundations; (5) colleges and universities; (6) health-related organizations (primarily hospitals); (7) charitable organizations (e.g., The United Way). A corporate director is considered to be involved in the governance of these organizations if he or she indicated that he or she was a trustee, director, governor, or, in the case of economic development organizations, a member.

executive officer, chief operating officer, executive vice-president, senior vice-president, secretary, treasurer, general counsel, vice-president, owner, or chairman of the executive committee of the board.

The percentages of the corporate directors who participate in the governance of at least one organization in each of the seven areas appear in Table 2. The overall level of participation ranges widely by type of organization, varying from 10% for economic development organizations to 50% for colleges and universities (explanation for the considerable interinstitutional variation in overall participation rates would be a useful undertaking but is beyond the scope of the present paper). As expected, the participation rate within an institutional sector varies by inner group centrality, with single directors typically displaying the lowest rate of involvement, multiple directors evidencing the highest rate, and double and triple directors showing intermediate levels. For economic development organizations, for instance, the rates range from 6% for single directors to 10, 9, and 15%, respectively, for double, triple, and multiple directors. The ratio of the multiple director participation rate to that of single directors is 2.44 for economic development organizations, the highest observed, and only 1.14 for charitable organizations, the lowest observed. Multiple directors are more involved than single directors in all areas, though for several areas the differences are very small. For other areas, however, most notably economic development, cultural, and research and scientific organizations, the differences are pronounced.

PARTICIPATION IN GOVERNMENT ADVISORY BODIES

The second area of institutional governance, participation in government advisory

bodies, is assessed in several ways. Pre-1976 service on a federal advisory committee was identified using the director's *Who's Who* biography. This source is problematic, however, since the year of the advisory service was frequently not reported and some of the service, though probably only a fraction, was likely to have antedated the directors' election to their corporate board(s). Accordingly, the director's service on federal advisory committees during 1976 was also identified, using the U.S. Senate subcommittee compilation. Finally, advisory work with local and state government units was assessed using *Who's Who* information.

As shown in Table 3, 17% of the corporate directors report at least some pre-1976 experience as advisors to the federal government; 6% were serving on federal advisory committees in 1976, and 22% indicate that they had served as an advisor to state or local government agencies at some time. The federal agencies most frequently the recipients of the directors' advice were, not surprisingly, the Departments of Commerce, Defense, Interior, and State; presidential panels and special commissions were also frequented by the directors.

A positive association between inner group centrality and participation in governance is, once again, observed. The percentage of the directors with pre-1976 federal advisory experience varied from 14 of the single directors to 22, 23, and 31, respectively, of the double, triple, and multiple directors. Similarly, the percentages with federal service in 1976 range from 3 for single directors to 5, 9, and 11 for the successively more central groups of directors. The differentiation of the ad-

Table 2. Percentage of Directors Serving As a Trustee, Director, Governor, or Member of at Least One Organization in Seven Areas

Number of directorships held by director	Economic develop. organ.	Cultural organ.	Research or sci. organ.	Philan. foundation	College or univ.	Health-related organ.	Charit. organ.	(No of cases)
One	6.1%	11.9%	13.7%	23.1%	43.8%	26.2%	22.5%	(160)
Two	9.9	20.0	14.0	30.1	48.8	25.7	24.4	(565)
Three	9.2	21.7	20.4	34.2	55.4	27.9	25.8	(240)
Four or more	14.9	27.2	22.1	33.3	53.8	30.8	26.6	(195)
All directors	9.8	20.4	16.6	30.5	50.3	27.1	24.7	(1,160)
Ratio of mult. direc. % to single direc. %	2.44	2.29	1.61	1.44	1.23	1.18	1.14	

Table 3. Percentage of Directors Serving on Advisory Bodies with Government Agencies

Number of directorships held by director	Federal government				State or local government	
	Pre-1976		1976		%	(N)
	%	(N)	%	(N)		
One	14.4	(160)	3.2	(433)	15.0	(160)
Two	22.3	(565)	5.4	(959)	21.9	(565)
Three	22.5	(240)	9.2	(338)	24.2	(240)
Four or more	30.8	(195)	11.0	(273)	22.6	(195)
All directors	16.8	(1,160)	6.3	(2,003)	21.6	(1,160)
Ratio of mult. direct. % to single direct. %	2.14		3.43		1.51	

visory experience by centrality is also replicated on the state and local level, though the disparities are far less marked. Here the participation rate varies from 15% of the single directors to 22, 24, and 23% of the double, triple, and multiple directors. The ratio of the participation rate for multiple directors to that of single directors is 2.14 for pre-1976 federal advisory service, 3.43 for 1976 federal advisory committees, and 1.51 for state and local government service. Thus, the association between inner group centrality and institutional governance observed for several types of nongovernmental institutions is also observed here for federal and local government advisory service.

PARTICIPATION IN MAJOR BUSINESS POLICY ASSOCIATIONS

The final area of institutional governance is participation in the work of major business policy associations. Business trade associations abound, of course, and most are organized to defend the interests of a particular type of industry, such as oil or steel, or to promote business interests in a local region. Yet a number have been established to provide a forum for the discussion and articulation of policies that affect most major companies, regardless of sector or region. These associations usually draw their members from the top ranks of a broad range of corporations scattered throughout the country; in some cases their rosters also include academics, attorneys, and other professionals actively concerned with the business world. Case studies of several major business associations suggest that they play an important role in establishing a common business position on contemporary issues,

especially in the area of public policy (e.g., see Eakins, 1966; Domhoff, 1970; 1975; Shoup, 1975; Hirsch, 1975; Fournier, 1976; Bonacich and Domhoff, 1977). Since the associations serve as a significant interface between business and government, direct participation in their affairs can have an important impact on the nature of public policies collectively promoted or opposed by business. The multifirm connections of inner group members should make them particularly valuable and forceful contributors to such organizations, and it is expected, therefore, that inner group centrality should be strongly associated with participation in the affairs of these business policy groups.

Rates of participation in the Council on Foreign Relations, Committee for Economic Development, Business Council (all closely identified with major corporations) and nine other associations are shown in Table 4. Overall, 12% of the directors participate in the affairs of at least one association, but when the rates are broken down by number of directorships, pronounced variations from this average become evident. The proportion of single directors active in one association is less than 1%; the percentages for

Table 4. Percentage of Directors Who Are Members of 12 Major Business Policy Associations

Number of directorships held by director	Member of one assoc.	Member of two or more assoc.	(No. of cases)
One	0.2%	0.2	(433)
Two	5.9	3.6	(959)
Three	11.2	6.8	(338)
Four or more	19.4	13.6	(273)
All directors	7.4	4.8	(2,003)

double, triple, and multiple directors are 6, 11, and 19. Similarly, the rates for those involved in at least two associations for the four directorship levels are, respectively, less than 1, 4, 7, and 14%. Less than 1% of the single directors participate in even a single association, while 33% of the multiple directors are active in one or more associations. It is in this area of governance that the greatest participation rate disparities as function of inner group centrality are observed.

CORPORATE RESOURCES AND SOCIAL NETWORKS

Earlier it was argued that an observed association between inner group centrality and participation in governance would be expected for at least several reasons. First, by virtue of oversight responsibilities for several major corporations, inner group members are in a position to mobilize greater resources on behalf of favored policies and institutions than are single directors. From the standpoint of the institution seeking business participation, inner group members can provide greater support for, and exert more influence on behalf of, the institution than can businesspeople associated with only a single firm. Second, participation in the boards of directors of several firms helps generate informal contacts with other multiple directors, and a national social network of multiple directors is likely to form.⁴ Again, from the standpoint of the institution seeking corporate representatives, members of this network can provide better social contacts and a broader understanding of business inter-

ests than would outsiders. Thus, the multiple directors' greater access to corporate resources and involvement in transcorporate, national social circles of top business leaders make them more attractive candidates for institutional governance than are other businesspeople. Moreover, the multiple directors' better corporate and network connections should give them a competitive edge over other directors when seeking to participate in the affairs of other institutions. They would be able to mobilize more firms and more business leaders to back their candidacy than would other, less connected and less visible corporate directors.

Still other factors were previously argued to contribute to the greater governance participation rate of multiple directors. But in any case, if corporate resource and social network factors do play a major role as expected, several observable patterns are anticipated. First, among directors with a fixed number of directorships, those serving on the boards of larger corporations are in a position to mobilize greater resources than are those associated with a similar number of smaller companies. Thus, holding the number of directorships constant, we should expect to see a larger average corporation size among those participating in institutional governance than among non-participants. Second, multiple directors are expected to be more heavily engaged in social networks among their own kind than single directors, and involvement in these networks should, in turn, independently enhance the directors' participation rates. Though our data do not permit detailed assessment of these hypotheses, at least elements can be checked with the information available.

A. Corporate Resources

While corporate size is a reasonably good measure of corporate resources, the size of the 797 firms is measured within the seven distinct sectors utilizing varying criteria (sales, assets, and operating revenue). The resources of all firms cannot, therefore, be readily assessed according to sales or any other single dimension of size. Of several alternatives considered,

⁴ Other points of contact among the multiple directors surely contribute as well to the formation of this network. Limited available evidence suggests that inner group members are more likely to be descendants of business elite families than are other members of the business elite. And other studies indicate that this social origin is often associated with a set of opportunities favorable to the formation of enduring social contacts among those of similar heritage: invitations to elite-sponsored social events, visits to exclusive vacation communities, attendance at elite preparatory schools and universities, and induction into exclusive societies and social clubs (Mills, 1956; Baltzell, 1964; Lundberg, 1968; Domhoff, 1970; Useem and Miller, 1975).

the following procedure for establishing a common size dimension offered the most suitable approach (the alternatives yielded results little different from those reported here). The rank position of the corporations within each sector is used as a base for a general resource index. The 500 industrials were ranked from one to 500 according to firm sales. The sales figures for 1969 ranged from slightly more than \$100 million for those ranked near 500 to between \$10 and \$20 billion for those near the top (General Motors is ranked one). The sales rank of these firms is similar to a logarithmic transformation of their dollar sales figures. The rank position of the fifty firms in each of the other six sectors, where rank position is established according to sales, assets, or operating revenues (depending on the sector), is simply set as equivalent to the rank of the largest 50 industrials. The commercial bank and insurance company with greatest assets, for instance, are both assigned a rank of one (in effect equating a directorship with either of them to a di-

rectorship with General Motors), while the 50th largest bank and insurance company are each assigned a rank of 50. The average rank of the firms of the directors is then calculated separately for double, triple, and quadruple directors (too few directors with more than four directorships were available for separate reliable analysis). Finally, the average of these averages is obtained for groups of directors who are involved and uninvolved in seven areas of governance that previously evidenced strong associations with inner group centrality.

The average ranks are shown in Table 5. The mean rank of the firms of double directors who were not involved in any economic development organization stood at 128, while the mean rank of those who did participate was 98, for an average difference of 30 rank positions. Similarly, among those with three directorships, the average rank of the corporations of economic development participants was 19 positions larger than the rank of the corporations of nonparticipants; the corre-

Table 5. Mean Rank of Corporate Directors' Firms, by Directors Involved Vs. Those Uninvolved in Seven Types of Institutional Governance, by Number of Directorships Held

Number of directorships held by director	Economic develop. organ.			Cultural organ.			Research or sci. organ.			Federal advisor pre-1976		
	No	Yes	Diff. ^a	No	Yes	Diff.	No	Yes	Diff.	No	Yes	Diff.
Two directorships												
Mean corp. rank (No. of cases)	128 (509)	98 (56)	30	129 (452)	107 (113)	22	123 (486)	134 (79)	-11	126 (439)	119 (126)	7
Three directorships												
Mean corp. rank (No. of cases)	118 (218)	99 (22)	19	120 (188)	102 (52)	18	120 (191)	99 (49)	21	121 (186)	99 (54)	22
Four directorships												
Mean corp. rank (No. of cases)	107 (91)	85 (15)	22	106 (77)	100 (29)	6	105 (84)	101 (22)	4	101 (74)	113 (32)	-12
Number of directorships held by director	Federal advisor 1976			State or loc. government advisor			Business policy assoc.					
	No	Yes	Diff.	No	Yes	Diff.	No	Yes	Diff.			
Two directorships												
Mean corp. rank (No. of cases)	127 (907)	106 (52)	21	130 (441)	107 (124)	23	132 (867)	76 (92)	56			
Three directorships												
Mean corp. rank (No. of cases)	124 (307)	91 (31)	33	121 (182)	100 (58)	21	125 (277)	83 (61)	42			
Four directorships												
Mean corp. rank (No. of cases)	106 (128)	79 (16)	27	108 (85)	88 (21)	20	113 (70)	88 (36)	25			

^a Under the *No* column appears the mean rank of the firms of directors who were not involved in the given area of governance; beneath the *Yes* column appears the mean rank of the firms of directors who were involved with at least one organization in the given area of governance; the *Diff.* column displays the difference between these two figures.

sponding rank difference for those with four directorships was 13. Comparable patterns are observed in the six other areas of governance examined: cultural organization governance, research or scientific organization governance, service as a federal advisor both before and during 1976, service as a state or local government advisor, and involvement in business policy associations. Of the 21 calculated differences for the seven areas of governance, only two were contrary to the expected direction (among double directors for research organization governance and quadruple directors for pre-1976 federal government advisory work). The median observed difference is 20 rank positions, which translates for the industrials into a sales difference of approximately \$190 million on a base of roughly \$1.2 billion. Participants were typically associated with firms approximately one-sixth again as large as the firms of nonparticipants. The gaps are not of great magnitude, but they are consistently present in nearly all seven areas of institutional governance. As expected by the resource hypothesis, then, the likelihood that directors with a fixed number of directorships are involved in governance is a positive function of the size of the corporations with which they are associated.⁵

The validity of the resource explanation is further suggested by the consistency of the present findings with those reported in two other studies in radically different settings. In a study of the 86 largest Dutch corporations in 1969, Mokken and Stokman (1978) find that the directors of the largest firms were substantially more likely to be involved in the affairs of government in the Netherlands than were the directors of smaller corporations. Simi-

larly, in an investigation of the local governance activities of the directors of local banks in St. Louis in 1975, Ratcliff et al. (1979) discover that bank size is strongly correlated with director participation in the governance of local charitable organizations, cultural organizations, and a business policy association.

B. Social Networks

The social network hypothesis suggested that the observed association between inner group centrality and participation in institutional governance is also partly the result of greater involvement of multiple directors, compared with single directors, in social circles among their own kind. Network participation cannot be directly assessed, but membership in the business policy associations does provide one indirect indicator of network involvement. Activity with such associations bring members into personal contact with the officers and directors of numerous large corporations located throughout the economy and the country. The resulting networks of acquaintanceship provide their members with an assessment of one another's leadership capacities and views on matters of public policy. Along with the ties of personal obligation which accompany the formation of social networks, these elements enable members more forcefully and effectively to promote each other for openings in the governing bodies of other institutions.

We have already seen that the number of corporate directorships and rate of participation in business policy associations are related, implying, if the previous assumptions are correct, that multiple directors are more active than other directors in the social networks that should bring them into prominence. To examine whether business policy association participation is in turn related to participation in other areas of institutional governance, we examine these participation rates as a function of business group membership. Table 6 displays the percentages of the directors who were active in six areas of governance, broken down into those who were members in no, one, and two or more business groups. The percentages

⁵ Since most (77%) of those with two to four directorships held these with firms in at least two sectors, the present analysis could not be undertaken separately within each of the seven sectors (a procedure that would have negated the need for the assumption that firms of similar rank in different sectors could be considered to represent equivalent resources). However, a sufficient number of the two-board directors with both positions located in the industrial sector was available to permit analysis limited to this group alone (N=170). The results of this more limited analysis are generally consistent with those reported above for the full analysis.

Table 6. Percentage of Directors Who Participate in Six Areas of Institutional Governance, by Number of Memberships in Major Business Policy Associations

Number of business assoc. memberships	Economic develop. organ. ^a	Cultural organ.	Research or sci. organ.	Federal advisor pre-1976	Federal advisor 1976	State or loc. gov. advisor
Zero	8.2%	18.5%	15.2%	19.6%	5.5%	21.9%
One	16.5	30.4	19.1	33.0	10.7	19.1
Two or more	20.5	29.5	30.8	44.9	14.6	20.5
Ratio of two assoc. % to no assoc. %	2.50	1.59	2.03	2.29	2.65	0.94

^a The number of cases on which the percentages are based is 967 for those with no business association memberships, 115 for those with one membership, and 78 for those with two or more memberships, except in the case of the federal-advisor-1976 variable, for which the numbers of cases are 1,758, 149, and 96, respectively.

show the expected pattern for all areas except state or local government advisory service. Of the directors without business association membership, only 8%, for instance, were involved with economic development organizations, whereas the percentages for those with one and at least two associations are 17 and 21, respectively. The ratio of the participation rates of those with two or more business association memberships to those with none is 2.50 for economic development organizations; 1.59 for cultural organizations; 2.03 for research or scientific organizations; 2.29 for pre-1976 federal advisory service; and 2.65 for 1976 federal advisory work. The ratio for state or local government advisory service, however, is less than one.

It is evident, then, that number of directorships is strongly associated with participation in business policy organizations, and that this participation is strongly associated with involvement in other areas of institutional governance. If indeed network involvement, as indexed by business association membership, is a factor in the multiple directors' preferential selection for institutional governance, the degree of association between the number of directorships and institutional governance should be reduced when business association membership is held constant. This possibility can be examined with multivariate table analysis, but a more compact form of presenting the results can be achieved using correlational analysis, and this will be employed here. The variables also are made more compact for the analysis, as follows: the economic development, cultural, and re-

search or scientific organization variables, in dichotomized form, are summed to form a *civic governance* variable (ranging from zero, for no involvements, to three, for participation in all three areas); the two federal government advisory variables, also in dichotomized form, are summed to form a *government advisor* scale (ranging from zero, for no service, to two, representing both pre-1976 and 1976 advisory service); *directorships* consists of the number of corporate directorships held (with more than four scored as four); and *business association* represents the number of business policy group memberships (with more than two coded as two). Because state or local government advisory service already has been found to be unrelated to business association membership, it is not included in the analysis.

The relevant simple correlations among these variables are displayed in Table 7. The correlation of directorships with business association is .26, with civic governance it is .14, and with government advisor it is .12. These figures are consistent with results obtained from the previous bivariate table analyses. Business association also is seen to correlate with the two governance dimensions (.17 and .18). If business association does, indeed, account for a substantial fraction of the relationship between directorships and the two governance dimensions, the correlation between directorships and each governance dimension should be reduced when business association is introduced as the control variable in a partial correlation. This does occur, as shown in Table 7. The partial correlations of directorships with civic governance and government

Table 7. Simple and Partial Correlation of Civic Governance and Government Advisor with Number of Directorships, Net of Business Association Membership

Variable	Mean ^a	Std. dev.	Correlation with no. of directorships	Correlation with bus. assoc. mem.	Partial correlation with directorships, net of bus. assoc. memberships
Directorships	2.405	.924			
Business association	.234	.560	.262		
Civic governance	.469	.678	.144	.170	.105
Government advisor	.318	.548	.120	.182	.076

^a All figures are based on 1,160 cases.

advisor, net of business association, are .11 and .08, respectively; these represent 73 and 65% of the simple correlations.

It appears, therefore, that social networks, as indexed by involvement in business policy association affairs, do facilitate the involvement of multiple directors in the governance of other institutions. The business policy associations would appear not only to help develop common business positions on matters of public debate, but also to provide a screening mechanism for selecting businesspeople to help oversee the affairs of other institutions. Inner group members disproportionately participate in such oversight in part because they disproportionately participate in business policy associations and the social networks they generate. The business policy associations examined here, all national in orientation and scope, do not appear to be responsible for screening members for state or local government advisory work. It may be that other, more locally oriented business groups, are responsible for this process at the local government level.

CONCLUSION

The evidence presented here indicates that, in regard to the placement of corporate directors in positions of governance over nonbusiness institutions, the capitalist class is differentiated, as expected, along an axis of inner group centrality. In three distinct areas of governance, variant participation rates were observed as a function of position on the inner group axis. Multiple directors were more likely to be involved than single directors in the governance of several types

of nonprofit private organizations (especially economic development, cultural, and research or scientific organizations), as advisors to local, state and national government agencies, and as members of major business policy associations. The participation rates of multiple directors frequently were observed to be more than twice those of single directors, with double and triple directors usually exhibiting intermediate rates. The consistency of these patterns across many areas of institutional governance provides tentative confirmation for the thesis that inner group members are generally more likely to serve as business representatives in nonbusiness governing bodies and positions than are other business people.

The disproportionate involvement of inner group members in institutional governance was expected, in part, because of their greater capacity to mobilize corporate resources and because of the likelihood that they would be more involved in a national, transcorporate social network of corporate directors. It was anticipated that these factors would result in inner group members more often being promoted for institutional governance positions by other members of the business elite, and in inner group members being more desirable business representatives from the standpoint of the recipient institution. The limited evidence considered here is consistent with this line of reasoning. Indexing corporate resources by the average rank size of the firms with which the directors were connected, and using membership in major business policy associations as an index of social network involvement, we found that both hypothesized factors did appear to be responsi-

ble, in part, for the overrepresentation of inner group members.

Several limitations on the validity and generalizability of these results, however, should be noted. First, a select set of corporate directors was studied, and it is possible, though improbable in my opinion, that the analysis of a set of directors drawn from a larger, more comprehensive list of companies would yield different conclusions. Second, more potentially problematic is the quality of the indicators employed in the study. The difficulty of acquiring precise, detailed information on the characteristics of a large set of corporate directors, their firms, and their participation in the governance of a variety of institutions necessitated reliance on available but often imprecise indicators for the variables of interest. No direct measure of social network participation for the more than 2,000 directors could be developed, for instance, leading to the use of an acceptable though clearly less than ideal proxy measure, business association membership. Our measures offer only a first approximation to the empirical relations among the variables of concern. It is expected, however, that more exact indicators would yield results generally consistent with those reported here while perhaps differing substantially in detail. For some variables, radically different empirical approaches may be required to acquire the direct and precise information needed. Perrucci and Pilisuk's (1970) method of obtaining social network information through personal interviews with multiple directors in a single community might be extended to the national level, though cost may prohibit the approach of more than a small subsample of the directors studied here.

A third limitation relates to what was not examined in this paper. As Alford and Friedland (1975) have argued, power cannot necessarily be equated with participation, although there is usually a strong relationship between these analytically separable dimensions. Thus, it should be cautioned that the overrepresentation of inner group members in governance does not automatically imply that they are decisively shaping the policies of the subject

institutions. Empirical studies of boards of directors and government advisors generally show that they do have an important impact on the institution's future (e.g., Wilensky and Lebeaux, 1958; Paltridge et al., 1973; Primack and von Hippel, 1974). If the results of such studies can be generalized, it may be speculated that the participating corporate executives are indeed exercising an important voice in the affairs of the institutions considered here. But the exact strength of their voice can only be a matter of theoretical supposition at this time, and further study obviously is required if we are to specify the amount of power that accompanies the participation.

A final limitation relates to a distinction between the exercise of power and the content of policies promoted. As Charters (1953) and Poulantzas (1969) have argued in connection with the role of business people on school boards and in top government positions, business participation does not necessarily imply that the interests of capital in general, or even the business person's own firm, are advocated. Even if the corporate directors in the present study do exercise considerable power over the institutions in whose governance they participate, it remains to be demonstrated that their power is exercised on behalf of anything but the best interests of the subject institution. It can be reasoned that inner group members are more likely than other members of the business elite to advocate the general concerns of business, and that both groups are likely to take more pro-business stands than do nonbusiness people involved in institutional governance. And while these arguments are relatively persuasive and evidence from other studies can be cited to bolster them, it remains to be shown that the corporate directors studied here do forcefully represent the interests of their class, or at least a major fraction of it, when they participate in the governance of other institutions. The thesis is plausible, yet unproven. The present paper, then, has explored only one part of the business-institutional governance relationship, and speculation about the operations of the other parts awaits verification.

But even short of verification of the other elements of the business-institutional governance relationship, the present evidence points toward the need for a revision in our thinking about the internal social organization of the American capitalist class. Business is differentiated along an axis of inner group centrality, and this element of internal organization appears to have a major bearing on how business is structured to express and represent its interests in places where other institutions are making decisions that can vitally affect business.

The political salience of the inner group axis stems in all likelihood, from several elements in the relationships among major corporations, their managers, and primary owners. Firms and those responsible for them are, of course, sharply divided by interfirm and intersectoral competition and rivalries. And the divergent economic circumstances faced by those overseeing firms operating in different environments add further division, especially when owners and managers specify the policies they would urge upon government agencies, cultural organizations, universities, and other institutions. Without suitable means for reconciling these antagonisms and identifying the common concerns of all business, political leadership for the capitalist class is unlikely to emerge. The divisive tendencies may then result in public policies which benefit some sectors or firms but do little to advance the general welfare of most major corporations and the class as a whole.

Though not self-consciously designed to solve these problems, several formal and informal relationships among corporations and their owners and managers nonetheless are likely to contribute toward their solution. Among these relationships are a network of kinship and acquaintanceship among corporate managers and owners spanning many corporations (Whitley, 1973); the diversification of institutional and family corporate holdings (Lundberg, 1968); the integrative role of commercial banks and other financial institutions (Kotz, 1978); social associations transcending firm, sector, and region, such as business policy organizations and exclu-

sive metropolitan social clubs (Baltzell, 1964); and the interlocking directorate studied here. The social forces behind the formation of each of these integrative relationships require separate analysis, but, whatever their origins, the consequences are likely to include a set of transcorporate networks that draw together the otherwise disparate units of the business elite. These disparate units include not only individuals but also specialized elite networks organized within metropolitan areas and within business sectors. Available research indicates that these contexts generate their own, specialized inner circles (Perrucci and Pilisuk, 1970; Ingham, 1978; Ratcliff et al., 1979), and it is probable that these and other types of localized networks provide many of the constitutive elements for the national, intercorporate networks that help to unite the entire class.

Concentrating on only a single strand of these various integrative networks, the present analysis tentatively confirms the thesis that this strand is a source of the "leading organizers of [the] system of class-wide property" (Zeitlin, 1976: 901). Those most central to the interlocking directorate are observed to be those most often involved in representing business interests, presumably shorn of many of their more parochial elements, to other institutions. A more precise identification of the "leading organizers" of the capitalist class than that achieved here would be possible if evidence were obtained on the other relationships contributing to the integration of the class and its firms. Unfortunately, adequate data on kinship, ownership, and other intercorporate networks is far less accessible, for the present at least, than is information on the network of corporate directorships. Were such information to become accessible, it can be speculated that those most central to these various networks are also those most active politically both within and outside the corporate community. Combined with the results of the present analysis, such findings would help to establish a more general thesis that the American capitalist class is characterized by a substantial degree of centralized

internal social organization, and the centralization, however faulty it may be in specific instances, provides a means for the entire class to distill and promote its most general class-wide interests.

As a result, the government and other institutions are not simply presented with a set of unaggregated demands when businesspeople enter their policy-making circles. Rather, the businesspeople who most often serve already represent a degree of reconciliation of the conflicting and contradictory interests dividing the capitalist class. The corporate community itself, then, appears at least partially capable of identifying its class-wide interests. While the state and other institutions may still play a critical role in "the liberation" of general interests from the "fragmented, stubborn, and shortsighted empirical interests of single capital units" (Offe, 1973: 111), the class may achieve a degree of prior interest "liberation" on its own.

This general thesis must be treated for the moment, however, more as a guide for further inquiry than an accepted description of the organizational coherence of the American capitalist class. Moreover, whatever the extent of class centralization eventually identified, there is reason to believe that it may be less pronounced in the U.S. than in Britain, France, and other advanced capitalist democracies where the business elite's geographic concentration is far greater, elite institutions such as universities and social clubs are more exclusive, and the level of organization and militancy of labor and socialist movements is much stronger.

REFERENCES

- Alford, Robert T., and Roger Friedland
1975 "Political participation and public policy." Pp. 429-79 in Alex Inkeles (ed.), *Annual Review of Sociology*, 1975. Palo Alto: Annual Reviews.
- Allen, Michael P.
1974 "The structure of interorganizational elite cooptation: interlocking corporate directorates." *American Sociological Review* 39: 393-406.
- Bacon, Jeremy
1967 *Corporation Directorship Practices*. New York: National Industrial Conference Board.
- Baltzell, E. Digby
1964 *The Protestant Establishment: Aristocracy and Caste in America*. New York: Random House.
- Bearden, James, William Atwood, Peter Freitag, Carol Hendricks, Beth Mintz, and Michael Schwartz
1975 "The nature and extent of bank centrality in corporate networks." Paper presented at the annual meeting of the American Sociological Association, San Francisco.
- Bell, Daniel
1961 *The End of Ideology*. New York: Free Press.
- Berg, Ivar, and Mayer N. Zald
1978 "Business and society." Pp. 115-43 in Alex Inkeles (ed.), *Annual Review of Sociology*, 1978. Palo Alto: Annual Review.
- Bonacich, Phillip, and G. William Domhoff
1977 "Overlapping memberships among clubs and policy groups of the American ruling class: a methodological and empirical contribution to the class-hegemony paradigm of the power structure." Presented at the annual meeting of the American Sociological Association, Chicago.
- Bunting, David
1976 "Corporate interlocking part III—interlocks and return on investment." *Directors and Boards* 1: 4-11.
- Burch, Philip H., Jr.
1972 *The Managerial Revolution Reassessed*. Lexington: Heath.
- Charters, W. W.
1953 "Social class analysis and the control of public education." *Harvard Educational Review* 23: 268-83.
- DiMaggio, Paul, and Michael Useem
1978 "Cultural property and public policy: emerging tensions in government support for the arts." *Social Research* 45:356-89.
- Domhoff, G. William
1970 *The Higher Circles: The Governing Class in America*. New York: Random House.
1975 "Social clubs, policy-planning groups, and corporations: a network study of ruling-class cohesiveness." *Insurgent Sociologist* 5:173-84.
- Dooley, Peter C.
1969 "The interlocking directorate." *American Economic Review* 59:314-23.
- Dye, Thomas R.
1976 *Who's Running America? Institutional Leadership in the United States*. Englewood Cliffs: Prentice-Hall.
- Eakins, David W.
1966 *The Development of Corporate Liberal Policy Research in the United States, 1885-1965*. Ph.D. dissertation, Department of History, University of Wisconsin, Madison.
- Fournier, Pierre
1976 *The Québec Establishment: The Ruling Class and the State*. Montréal: Black Rose.
- Freitag, Peter J.
1975 "The cabinet and big business: a study of interlocks." *Social Problems* 23: 137-52.

- Hartnett, Rodney T.
1969 *College and University Trustees: Their Backgrounds, Roles and Educational Attitudes*. Princeton: Princeton University Press.
- Higley, John, G. Lowell Field, and Knut Grøholt
1976 *Elite Structure and Ideology: A Theory with Applications to Norway*. New York: Columbia University Press.
- Hirsch, Glenn K.
1975 "Only *you* can prevent ideological hegemony: the Advertising Council and its place in the American power structure." *Insurgent Sociologist* 5:64-82.
- Ingham, John N.
1978 *The Iron Barons: A Social Analysis of an American Urban Elite, 1874-1965*. Westport: Greenwood Press.
- Koch, A., and S. Labovitz
1976 "Interorganizational power in a Canadian community: a replication." *Sociological Quarterly* 17:3-15.
- Koenig, Thomas, Robert Gogel, and John Sonquist
1976 "Corporate interlocking directorates as a social network." Unpublished paper. Department of Sociology, University of California, Santa Barbara.
- Kolko, Gabriel
1969 *The Roots of American Foreign Policy*. Easton: Beacon.
- Kotz, David M.
1978 *Bank Control of Large Corporations in the United States*. Berkeley: University of California Press.
- Landau, David
1977 "Trustees: the capital connection." *Health/PAC Bulletin* 74:1-23.
- Lundberg, Ferdinand
1968 *The Rich and the Super-Rich*. New York: Bantam.
- Mace, Myles L.
1971 *Directors: Myth and Reality*. Cambridge, Ma.: Harvard Graduate School of Business Administration.
- Mariolis, Peter
1975 "Interlocking directorates and control of corporations: the theory of bank control." *Social Science Quarterly* 56:425-39.
- Miliband, Ralph
1969 *The State in Capitalist Society*. New York: Basic.
- Mills, C. Wright
1956 *The Power Elite*. New York: Oxford University Press.
- Mintz, Beth
1975 "The president's cabinet, 1897-1972: a contribution to the power structure debate." *Insurgent Sociologist* 5:131-48.
- Mokken, Robert J., and Frans N. Stokman
1978 "Traces of power III: corporate-governmental networks in the Netherlands." In Hans J. Hummell (ed.), *Mathematische Ansätze zur Analyse Sozialer Macht*. Duisburg, Germany: Sozialwissenschaftliche Kooperative.
- Offe, Claus
1973 "The abolition of market control and the problem of legitimacy (I)." *Kapitalistate* 1: 109-16.
- Paltridge, James Gilbert, Julie Hurst, and Anthony Morgan
1973 *Boards of Trustees: Their Decision Patterns*. Center for Research and Development in Higher Education, University of California, Berkeley.
- Perrucci, Robert, and Marc Pilisuk
1970 "Leaders and ruling elites: the interorganizational bases of community power." *American Sociological Review* 35:1040-57.
- Pfeffer, Jeffrey
1972 "Size and composition of corporate boards of directors." *Administrative Science Quarterly* 17:218-28.
1974 "Cooptation and the composition of electric utility boards of directors." *Pacific Sociological Review* 17:333-63.
- Poulantzas, Nicos
1969 "The problem of the capitalist state." *New Left Review* 58:67-78.
- Primack, Joel, and Frank von Hippel
1974 *Advice and Dissent: Scientists in the Political Arena*. New York: New American Library.
- Ratcliff, Richard E., Mary Elizabeth Gallagher, and Kathryn Strother Ratcliff
1979 "The civic involvement of bankers: an analysis of the influence of economic power and social prominence in the command of civic policy positions." *Social Problems* 26:298-313.
- Shoup, Laurence H.
1975 "Shaping the postwar world: the Council on Foreign Relations and United States war aims during World War Two." *Insurgent Sociologist* 5:9-51.
- Sonquist, John, and Thomas Koenig
1976 "Examining corporate interconnections through interlocking directorates." Pp. 53-83 in Tom R. Burns and Walter Buckley (eds.), *Power and Control: Social Structures and Their Transformation*. Beverly Hills: Sage.
- Soref, Michael
1976 "Social class and a division of labor within the corporate elite: a note on class, interlocking, and executive committee membership of directors of U.S. industrial firms." *Sociological Quarterly* 17:360-8.
- U.S. Congress, House Committee on the Judiciary, Antitrust Subcommittee
1965 *Interlocks in Corporate Management*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Senate Committee on Governmental Affairs, Subcommittee on Reports, Accounting and Management
1977 *Federal Advisory Committees*. Washington, D.C.: U.S. Government Printing Office.
- Useem, Michael
1978a "The inner group of the American capitalist class." *Social Problems* 25:225-40.

- 1978b "The inner group and business influence on American colleges and universities." Paper presented at the Conference on Power Structure in American Education, San Francisco.
- Useem, Michael, and S. M. Miller
1975 "Privilege and domination: the role of the upper class in American higher education." *Social Science Information* 14:115-45.
- Villarejo, Don
1962 "Stock ownership and the control of corporations: part III." *New University Thought* 2:47-62.
- Whitley, Richard
1973 "Commonalities and connections among directors of large financial institutions." *Sociological Review* 21:613-32.
- Wilensky, Harold L., and Charles N. Lebeaux
1958 *Industrial Society and Social Welfare*. New York: Free Press.
- Zald, Mayer N.
1969 "The power and functions of boards of directors: a theoretical synthesis." *American Journal of Sociology* 75:97-111.
- Zeitlin, Maurice
1974 "Corporate ownership and control: the large corporation and the capitalist class." *American Journal of Sociology* 79:1073-119.
- 1976 "On class theory of the large corporation." *American Journal of Sociology* 81:894-903.
- Zeitlin, Maurice, W. Lawrence Neuman, and Richard Earl Ratcliff
1976 "Class segments: agrarian property and political leadership in the capitalist class of Chile." *American Sociological Review* 41:1006-29.
- Zeitlin, Maurice, Richard Earl Ratcliff, and Lynda Ann Ewen
1974 "The 'inner group': interlocking directorates and the internal differentiation of the capitalist class of Chile." Presented at the annual meeting of the American Sociological Association, Montreal.

POLITICAL DEMOCRACY AND THE TIMING OF DEVELOPMENT*

KENNETH A. BOLLEN

Brown University

American Sociological Review 1979, Vol. 44 (August):572-587

This research explores the relationship between development timing and political democracy. A number of social scientists have argued that the conditions favoring political democracy have deteriorated over time so that the late developing countries are less likely to be democratic than are the early developers. Another perspective suggests that with the worldwide diffusion of the democratic ideology there is a great deal of pressure for the later developers to adopt democratic forms of government. For a large sample of countries, this analysis reveals no significant relationship between the timing of development and the level of political democracy. However, when more specific characteristics of development timing are explored, some significant effects are found. In particular support is found for the hypotheses that the greater the extent to which a culture is Protestant-based, the greater the level of political democracy; and the greater the state's control of the economy, the lower the level of democracy. In a panel analysis, changes in political democracy are found to be negatively related to the state's economic control but not significantly related to Protestantism. In all of the regressions the level of development has a more significant direct effect than the various timing measures.

The positive relationship between socioeconomic development and political democracy has been the subject of considerable empirical research (e.g., Lerner, 1958; Lipset, 1959; Cutright, 1963; Cutright and Wiley, 1969; Jackman, 1973). In more recent empirical studies the relation-

ship between political democracy and income inequality has been examined and debated (Jackman, 1974; 1975; Hewitt, 1977; Robinson and Quinlin, 1977; Stack, 1978; Robinson, 1978). In contrast to this empirical research a number of theoretical works have emphasized the effects on political democracy of the historical period when a country begins to develop (e.g., de Schweinitz, 1964; Moore, 1966). These latter works have concluded that the social, economic, and political conditions which existed for the earlier developers were far more conducive to democ-

* Direct all communications to: Kenneth A. Bollen; General Motors Research Laboratories; Societal Analysis Department; Warren, MI 48090.

I wish to thank Vincent Covello, Barbara Entwistle, Robert Marsh, Bonnie Payne, Dietrick Rueschemeyer, and an anonymous referee for comments on earlier drafts of this paper.

racy than are the conditions facing the late developers. As a result, the early developers are viewed as more likely to be democratic than are the more recent developers.

Many of the countries which are at the highest levels of economic development are also the nations which began to develop in the earliest historical periods. This raises the question of whether it is the historical *timing* or the *level* of development that is the primary determinant of political democracy. If the historical period of development has the dominant influence, the chances for political democracy would not improve with socioeconomic advances. The characteristics of the time at which a society began its development would fix the form of its political system. In contrast, if developmental factors are more important, the level of political democracy would not be fixed but would be associated with socioeconomic changes. This paper presents and tests several major hypotheses on the effects of the timing of development on democracy while controlling for the level of development.

EARLY AND LATE DEVELOPMENT EFFECTS

The time in world history when a country begins to develop will affect its social, economic and political systems (see, e.g., Black, 1966; Levy, 1966; Seers and Joy, 1970). Britain, the first economy to "take-off" into rapid economic growth, altered the path of development for all the countries that were to follow it. It established a model of economic development that influenced France, Belgium, America and numerous other countries. As the number of successful economies grew, the pool of potential models for the industrial development of other countries grew. At the same time the relevance of the traditional development models became questionable. Part of the reason for the irrelevance is that the first developers were largely from a similar western cultural heritage. In contrast, the later developers represent a more heterogeneous set of sociocultural systems, some of which are not easily malleable to the transformations required to begin and maintain economic

development. It is an open question whether democratic forms of government are consistent with the diverse sociocultural systems of these countries.

In addition many of the late modernizers face greater strains in their societies than were present in the first developers. Part of this strain is caused by what is often called *demonstration effects*. That is, the latecomers are well aware of what goods economic development can bring to their society and at the same time they are aware of their own economic backwardness. Rather than having a population willing to save and invest for an unknown future there is a great deal of pressure in the late developers for immediate consumption and social welfare as is found in more mature economies. A political democracy allows these rising and often competing demands to impinge upon the political system while the developing country's economic system is not advanced enough to satisfy the demands. These pressures may lead to the collapse of democratic regimes and give rise to a more authoritarian government which may or may not be better able to meet the demands but will be more successful in suppressing the demands.

Further strain is placed on the developing societies as a result of their rapid increases in population. The rapid diffusion of public health programs and inexpensive "death-control" technology to many of the Third World nations, has led to tremendous drops in mortality (Davis, 1956; Gray, 1974). The rapid declines in mortality have not been accompanied by proportional drops in fertility and the result has been unprecedented increases in population. The population increases have put more pressure on the resources of the societies to feed, clothe and house a substantial number of new individuals who will not contribute to the work force for years to come. Emigration, which might relieve some of the population pressure, is made nearly impossible by quotas and immigration restrictions that are found in both developed and developing countries (de Schweinitz, 1964).

The population problem and the other strains associated with late development are believed to make it difficult for a

democratic form of government to be effective in developing nations (de Schweinitz, 1964; Moore, 1966). A democratic form of government is seen as a luxury that cannot be afforded by a nation struggling to overcome poverty and starvation. In addition the birth control policies, economic and social changes that are considered essential to development are viewed as nearly impossible to achieve within a democratic framework. Instead, an authoritarian government with a concentrated distribution of political power is seen as a likely and necessary response to the tensions of late development (Heilbroner, 1974). The earlier developers did not have to cope with the same strains that are faced by the latecomers. They could afford to develop with a more diffused distribution of political power.

The world system and dependency perspective on national development suggest some additional reasons why the early developers are more likely to be politically democratic than are the late developers. In this perspective the early developers such as the U.S., U.K., France, etc. are considered the "core" nations of the world system. Political democracy is viewed as a system established by the elites within the core nations to avoid massive conflict with the core nonelites (Wallerstein, 1977: 34). The ideology of political freedom and democracy spread rapidly through the early developers and made authoritarian political control give way to more subtle economic forms of control.

In contrast, the late developers are viewed as the peripheral nations in the world system. Their underdeveloped status is seen as at least partially a consequence of the development of the core nations (see, e.g., Baran, 1956; Frank, 1973; Wallerstein, 1974; Chase-Dunn, 1975). Galtung (1971), along with other dependency theorists, has emphasized the commonality of interests shared by the elites in the periphery nations and the elites in the core nations. The core nations are said to provide monetary and political rewards to those elites in the periphery nations that help advance the core elite's interests. "The power of the elites in dependent peripheral countries is backed by

their alliances with the core. . ." (Chase-Dunn, 1975:724). The political power of the elites in the late developing periphery is strengthened by the support they receive from the core, early developers. The elites in the periphery may then be better able to maintain authoritarian rule. Thus, the late developers (or periphery nations) are less likely to have democratic political systems than are the early developers (or core nations).

Based on these and other conditions of early and late development a number of authors (e.g., de Schweinitz, 1964, and Moore, 1966) have suggested the following hypothesis:

Hypothesis 1: The earlier a country begins to develop, the higher its level of political democracy.

The early developers provided not only a model of economic development (as described above) but also a model of political "development." Most of the early developers of Western Europe and North America evolved political systems that were more democratic¹ than that found in other countries. The democratic ideology which legitimizes the democratic political system has become an important component of the political culture of these nations. The ideal of "rule by the people" has moved beyond the borders of the early developers and has spread to all corners of the globe. "Participation in public affairs at the national level has widened: in one country after another the earlier dichotomy between rulers and ruled has become blurred" (Bendix, 1976:245).

The democratic ideology has been spread by books, movies, radios, and other vehicles of cultural transmission. The education of many of the Third World elites in western universities or under western systems of education also contributed to the diffusion of the belief in popular sovereignty. Ironically, the often nondemocratic colonialism of western

¹ The differences in political power between males, females, races, occupations, and educational groups are obvious reminders that the democratic ideal is far from being met in any country developed or not.

powers served to spread the democratic ideal if not the practice.

Although the spread of the democratic ideology has been worldwide, institutionalizing the ideal has proved far more difficult as is exemplified by the alteration of democratic to authoritarian governments in some Third World nations. However, the spread of the ideal has put authoritarian governments in a defensive position. A concentrated distribution of power must be justified to the masses within a country as well as to world public opinion. This will exert pressure toward more rather than less democratic forms of governments in the late developers.

The above argument suggests a second hypothesis that makes a prediction contrary to Hypothesis 1.

Hypothesis 2: Because of the diffusion of the democratic ideal over time, the later the time of development the more pressure toward adopting a democratic form of government.

In addition to these two general timing hypotheses, a number of more specific characteristics of early and late development have been hypothesized to affect political democracy. In the next two sections the effects on political democracy of a Protestant-based culture and the strength of the state are discussed.

PROTESTANT-BASED CULTURE

One specific characteristic of the early developers which has been hypothesized to facilitate the rise of democracy is the extent to which a culture is influenced by Protestantism. As argued above, the diffusion of the democratic ideology has been worldwide. However, democratic political systems have seemed to receive their greatest legitimation in Protestant-based cultural systems. Lenski and Lenski (1974:349) argue that Protestantism was largely responsible for the extensive diffusion of the democratic ideology: "Among the various factors that contributed to the rise and spread of the

new democratic ideology, Protestantism looms large. Whatever else the Reformation accomplished, it proved that established authority could be challenged and overthrown."

Schumpeter (1950) claims that Protestantism served to legitimate the democratic ideology through closely related religious beliefs. For example, the ambiguity in interpreting the will of God was resolved by seeking the will of the people. In a similar manner the values of "equality" and the importance of all individuals were legitimated by and consistent with Protestant religious beliefs (Schumpeter, 1950: 265).

The relatively democratic governments of Japan, Israel and India, among others, are sufficient to demonstrate that Protestantism is not a *necessary* condition for democracy. Rather, the role of Protestantism is that of aiding the diffusion of and legitimizing values associated with, political democracy. These arguments lead to the formulation of a third hypothesis.

Hypothesis 3: The greater the extent to which a nation's culture is Protestant-based, the higher its level of political democracy.

STATE'S ROLE IN ECONOMIC SYSTEM

The state or government's control of the economic system was relatively minor in the early developers. Instead the means to attain economic advancement were open to private, entrepreneurial experimentation. The commercial class in the early developers was able to gain a status significantly independent of the agricultural elites (Moore, 1966). The relative autonomy and freedom of the commercial class led to even greater economic growth. As Landes (1969:19) observes:

those economies grew fastest that were freest. This is not to imply that state enterprise or control is intrinsically inferior to private enterprise; simply that, given the state of knowledge in pre-industrial Europe, the private sector was in a better position to judge economic opportunity and allocate resources efficiently.

Thus, the early developers' push toward industrialization was engineered by private entrepreneurs with a minimum of state intervention.

Karl de Schweinitz (1964) argues that the advancements of the early developers generated by a relatively autonomous commercial class diminished the political power held by the traditional governing elite. The economic gains of the commercial class led to their demands and receipt of a larger share of political power. In short, the minimal role of government in the economic development of the early developers seemed favorable to the extension of democracy in the political sphere.

The close connection between political democracy and this capitalist form of development has been recognized at least since the writings of Adam Smith. The ideal of a competitive and free struggle for leadership in democracies is quite consistent with the ideal of competitive and free trading in a market economy. In the political sphere the vote may be considered analogous to the dollar as a purchasing unit that, instead of buying economic goods, is spent in the selection of the ruling elites. Schumpeter's (1950:285) quote of a successful politician illustrates this point: "What businessmen do not understand is that exactly as they are dealing in oil so I am dealing in votes."

The capitalist mode of development, which was characteristic of many of the early developers, plays a less important role in the late developers. In response to foreign economic and political penetration and/or to overcome economic stagnation, the government in many of the latecomers will often play a more active economic role than was true in the early developers (de Schweinitz, 1964; Rubinson, 1976). The state may be the only domestic institution that can accumulate the great amount of capital that is required to stimulate development. The nationalization of industries, the imposition of quotas on imports, and the creation of programs to increase native production are all examples of the enlarged role that the late developers' governments play.

According to de Schweinitz (1964:59-75) the state or government in the latecomers is also likely to play a bigger part in handling the discontent of labor

that accompanies a higher level of economic development. In the early comers labor was able to organize largely independently of the state. In the process of organization and legitimation the laborers gradually were able to attain a greater amount of political power. The late developers, however, cannot afford to have the growth processes slowed down by the demands of labor. Karl de Schweinitz argues that the state tends to incorporate the labor unions into the government so that they do not have a chance for autonomous development. The close ties of labor organization and the state weakens the impetus toward a more diffused distribution of political power. Under these conditions the political elites will be able to maintain a concentrated distribution of power. Moore (1966) also argues that the state plays a much larger role in the development of the latecomers. He hypothesizes that with the change from the bourgeois revolutions of the early developers to the "revolutions from above" and the "peasant revolutions" of the latecomers, the chances for political democracy have been greatly diminished.

These arguments suggest that if a state or government exercises a great degree of control in the economic system this will lead to a more concentrated distribution of power in the political system.

Hypothesis 4: The greater the state's control of the economic system, the lower the level of democracy in the political system.

MEASURES

A sample of 99 countries at widely varying levels of development is used for the empirical analysis. Because data for the state's control of the economic system are not available for Communist countries (except Yugoslavia) the sample omits these societies. The following measures are used to operationalize the theoretical concepts that are specified in Hypotheses 1-4.

Time of Development

The time in world history that a nation begins to develop is a rather complex con-

cept. It is not the "time" per se that is important but the combination of variables characterizing a historical period. Hypothesis 1 represents the views of some theorists that the factors characterizing the historical periods of the earlier developers favored political democracy. These favorable factors have steadily deteriorated over time so that the later the development the more obstacles to democratic development. Hypothesis 2 supports the opposite generalization; the conditions for democracy have improved, the later the time of development. When measuring the time of development it is difficult, if not impossible, to single out a particular year that unambiguously marks a starting point in a nation's development. There is also the possibility that "breakdowns of modernization" may occur (Eisenstadt, 1964). Regional differences in starting points of development within nations are also likely. For example, in the United States the East began a period of rapid growth before other regions of the country. However, there are clearly differences in the timing of development when contrasting the various nations of the world so that it is possible to derive *approximate* starting points.

For this research two measures of timing are used. The first is measured by Black (1966) as reported in Taylor and Hudson (1971). It is the approximate year at which the consolidation of modernizing leadership occurs and is the first step in the development process.

The consolidation is marked by three characteristics: (1) the assertion of the determination to modernize; (2) an effective and decisive break with the institutions of an agrarian way of life; and (3) the creation of a national state with an effective government and a reasonably stable consensus on political means and ends by the inhabitants. (Taylor and Hudson, 1972: 16)

The timing variable was scored by subtracting the starting year of development for each country from 1966.² This gives the highest score to those countries which have been developing the longest and the lowest scores to those countries recently beginning to develop.

² The year 1966 is arbitrary. Any other year could be chosen without affecting the results.

As an added check on the timing hypothesis a second measure of the timing of development is used for a smaller sample of countries. This is the approximate economic take-off date from Rostow (1961:38; 1971:55) and Collier (1975:341). Rostow (1961:39) establishes three criteria to be met for a country to attain economic take-off:

- (1) a rise in the rate of productive investment from, say, 5% or less to over 10% of national income (or net national product [NNP]);
- (2) the development of one or more substantial manufacturing sectors, with a high rate of growth;
- (3) the existence or quick emergence of a political, social and institutional framework which exploits the impulses to expansion in the modern sector and the potential external economy effects of the take-off and gives growth an on-going character. (Rostow, 1961:39)

Rostow lists take-off dates for a little over a dozen countries. This sample is too small to be reliable. Collier's (1975) economic take-off date for Latin American countries supplements Rostow's measure.

Collier (1975) measures the economic take-off date by using the physical indicator of when a country reached electric production of .10 kilowatt-hours per capita. He finds that this indicator, as well as several other physical indicators, lead to take-off dates that are close to Rostow's take-off dates for the few countries where Rostow's and Collier's (1975: 340-1) sample overlap. A combination of Rostow's and Collier's take-off dates form the second timing measure.³

Protestant-Based Culture

An indicator of how much a cultural system derives from Protestant ideas is the proportion of a nation's population that is Protestant. For most parts of the world the percentage of Protestants in a

³ To maintain comparability with the rest of the analyses, I did not use the economic take-off dates of the Communist countries of China, Cuba and Russia. In a regression not reported here these countries were used in an analysis which included a dummy variable for Communist countries. The basic results were the same as reported in Table 2—the coefficient for the economic take-off was not significantly different from zero.

nation has changed very slowly. For the African nations where there is increase in Protestantism, this data is for 1965 (Taylor and Hudson, 1971).

State's Control of Economic System

One indicator of the state's control of the economic system is the proportion of a nation's economic activity consumed by the government. A measure of general government consumption as a proportion of GDP in 1960 is used.⁴ This World Bank measure includes all current expenditures for purchase of goods and services by central, regional, and local governments.⁵

Economic Development

Economic development is measured by the natural logarithm (ln) of energy consumption per capita in 1965⁶ (Taylor and Hudson, 1972). The utility of using energy consumption as an indicator of development is recognized by many social scientists. Work by Cottrell (1953; 1960) provides a multilinear theory of societal evolution based upon the role of energy. Within development theory, Levy (1966) has given the most attention to the importance of energy in the development process. In fact he defines development or modernization on the basis of the amount and uses of inanimate energy and tools.

The basic relationship that energy consumption has to development is also supported by empirical works. Darmstadter (1971) shows that there is a high correlation between per capita energy consumption and per capita GNP both cross-sectionally and over time. The amount of industrial capital stocks that a country has is central to its industrialization process.

⁴ The 1960 measure of government consumption was chosen because it had a more significant relationship to political democracy than either the 1965 or 1955 measure.

⁵ For a more detailed description of the components of this measure see World Bank (1976:6-7).

⁶ The 1965 measure of energy consumption was empirically chosen over a 1960 measure because of its closer relationship to the 1965 political democracy index. In the panel analysis reported later, the 1960 measure is used since the 1965 measure could not affect changes in political democracy from the earlier period 1960-65.

Frank (1959), testing time-series data, finds a correlation of 0.989 between energy consumption and industrial stock for the U.S. and a similar correlation for the U.K.

Using energy consumption also avoids some of the exchange rate and comparability problems that arise in using GNP and GDP. In addition energy consumption is often available for a larger and more representative sample of countries than is GNP or GDP.

The ln of energy consumption is used because there is empirical evidence that the relationship between development and democracy is curvilinear and can be best captured by a log transformation of energy consumption (Jackman, 1973). In addition the transformation reduces the extreme skewness in the untransformed energy consumption variable.

Political Democracy

Like many complex and abstract concepts in the social sciences, there are a number of possible definitions of political democracy. Common to many of these definitions are two dimensions: (1) popular sovereignty, and (2) political liberties. The first dimension, popular sovereignty, implies that the elites of a country must be accountable to the nonelites. The most common institution through which the nonelites exercise their control is through elections. In order for elections to represent popular sovereignty, there must be as wide a franchise as possible, equal weighting of votes and fair electoral processes. The second dimension, political liberties, is also essential to political democracy. Political liberties include the rights of free speech, a free press, and the right to organize against any officeholders or their policies.

One or both of these dimensions are found in other definitions of political democracy. Hewitt (1977:456-7), for instance, lists three characteristics of political democracy: (1) an elected chief executive (or executive responsible to elected assembly), (2) universal manhood suffrage, and (3) "fair" elections as represented by a secret ballot. All three of these

characteristics are indicators of popular sovereignty. Hewitt does not list any indicators of political liberties.

Lenski (1966:319) lists three criteria of political democracy: (1) universal adult suffrage, (2) the right of political opposition, and (3) the right of disadvantaged elements in the population to organize on their own behalf. This definition includes both of the dimensions discussed above; the first criterion indicates popular sovereignty and the second and third are elements of political liberties.

As illustrated by the preceding discussion there are numerous potential indicators of political democracy. But given the limited cross-national data that exists, the best that can be done is to attain a sample of all possible indicators of the construct, and to use these as measures of political democracy.

One goal in selecting indicators for this research is to choose those which are available for the largest possible sample of nations. It is important to have a democracy index that is representative of both developed and developing nations. Measures of political democracy used by Lipset (1963), Neubauer (1967), Cutright and Wiley (1969), and Hewitt (1977) do not have adequate coverage of less developed countries (LDC), whereas the measures of Coleman (1960) and Adelman and Morris (1973) do not include more developed countries (MDC). Those indices that contain both LDCs and MDCs, such as Jackman (1974; 1975), are often still not much larger than 60 to 80 countries.

It is also desirable to have an index that is available for more than one time period. In a later section of this paper a panel analysis will be used necessitating an index that is available for two time periods so that changes in political democracy can be analyzed. This goal of having measures at two time points conflicts with the goal of having a number of countries at varying levels of development. Since a significant proportion of the LDCs became independent in the late 1950s and early 1960s, not many indicators for them will be available before this time period. For example, Cutright and Wiley (1969) have a political representation index available for four ten-year periods extending back to

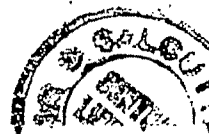
1927-36. But their sample is composed of only 40 countries. Coleman (1960), Lipset (1963), Cutright (1963), Neubauer (1967) and Jackman (1974; 1975) present indices for only one time-period.

Even more important to the selection of an index is the question of the validity of some of the indicators used in the political democracy indices (May, 1973). For example, a number of studies have failed to distinguish between political democracy and political stability. Lipset (1963), Cutright (1963), McCrone and Cnudde (1967), Smith (1969), Cutright and Wiley (1969), and Coulter (1975), among others, use an index that awards the highest scores to countries that are *stable* and *democratic*; "A scheme for scoring nations . . . should penalize each nation for political instability which represents 'backsliding' and reward it for achieving or retaining more complex political forms of organization" (Cutright, 1963:256).

Jackman (1975:86) claims that the failure to distinguish between stability and democracy has led to spurious findings in the study of political democracy's effects on economic equality.⁷ Spurious findings might also result in this research if one of these measures were used. This is because those countries that have been developing the longest are generally the most stable. A democracy measure incorporating stability in its construction would increase the chances of a positive relationship because of stability's positive association with the length of time a country has been developing. The confounding of stability and democracy in one index also complicates the study of changes in democracy. Although a country's level of democracy may change drastically over a five- or ten-year period (e.g., Brazil, 1960-65), an index aggregated over a ten- or twenty-year period may gloss over these changes.

Another variable that is related to political democracy, but can be conceptually

⁷ Jackman's argument has recently been critiqued by Robinson and Quinlan (1977), who claim that similar findings occur using either Jackman's democracy index or Cutright's. However, Robinson and Quinlan constructed Cutright's index over a shorter time period than originally used by Cutright, thereby lessening the very stability aspect that Jackman criticized (see Robinson and Quinlan, 1977: 613, fn. 4).



ally distinguished from it, is the percentage of the adult population voting. This indicator also has been used in a number of indices (e.g., Lerner, 1958; Smith, 1969; Jackman, 1975). Although having democratic institutions has no meaning without some popular participation, the percentage of the population voting in an election may reflect factors other than the extent of political democracy. For example, Kornhauser (1959) and Huntington (1968) argue that mass participation is considered desirable in both democratic and authoritarian regimes and therefore, high voting participation can be found in either type of society. Some countries require participation of all voters in elections so that participation statistics reflect a legal requirement rather than how democratic the system is. In addition, low levels of participation may result from either apathy of the voters or satisfaction with the government so that participation is viewed as not necessary (Lipset, 1963). A more pragmatic reason for not using participation statistics is that it is difficult if not impossible to get these statistics for a large number of LDCs and for more than one time period. A measure of the percentage of the population eligible to vote (the franchise) is a much better indicator of political democracy but an accurate measure of it is even more difficult to find than accurate participation statistics. These and other arguments (see May, 1973) suggest that using voting participation as an indicator of political democracy raises a number of difficulties.

Political democracy should also be distinguished from social democracy. A strong socialist or labor party in power may be crucial to reducing the inequalities in the distribution of social and economic goods, but such indicators of social democracy are analytically distinct from indicators of political democracy. "Political democracy is not a sufficient condition for the achievement of a more equal society. The crucial matter is what the mass electorate does with the franchise and other democratic procedures" (Hewitt, 1977: 451). In fact the relationship between political and social democracy is the subject of considerable research (see, e.g., Jackman, 1975; Hewitt, 1977). At

this point it seems best to treat these two concepts separately.

Because of the limitations in the other indices discussed above, a different index of political democracy is constructed. Of course there are a number of limitations which remain (e.g., no indicator of the popular support of government policies between elections), but the index has several advantages over existing ones.⁸ For example, it does not confound indicators of stability, voter turnout or economic equality with political democracy. In addition the index is available for over 120 countries in 1965 and 110 in 1960, including a large number of LDCs as well as MDCs.

The index consists of six components; three indicators of popular sovereignty and three of political liberties. The three measures of popular sovereignty are: (1) fairness of elections, (2) effective executive selection, and (3) legislative selection. The indicators of political liberties are: (4) freedom of the press, (5) freedom of group opposition, and (6) government sanctions. A description of each component and a correlation matrix of them is in the Appendix of this paper.⁹ Cronbach's (1951) alpha for the index is over .9, indicating high reliability. In addition, the index has moderate to high correlations with a number of other democracy indices (e.g., 0.70 with Adelman and Morris [1973], 0.79 with Jackman [1973], and 0.85 with Cutright and Wiley [1969]).

ANALYSIS

Hypotheses 1 and 2 represent the two most general propositions of this research. The first hypothesis suggests that the conditions favoring the rise of political democracy have deteriorated over time so

⁸ Several other limitations also can be mentioned. For example, there are no indicators of the class, sex, and race composition of the political elite. Nor is there a measure of how "open" the elite is in its recruitment of new members. Measures such as these would provide additional measures of popular sovereignty and the extent to which a "power elite" exists in countries which meet some of the other, more common conditions (e.g., fair elections and political liberties) of democracy.

⁹ A more complete discussion and presentation of the index is in preparation.

that the later a country begins to develop the less its chances for democracy. Hypothesis 2 states that the chances for democratic political systems have improved because of the worldwide diffusion of the democratic ideology.

These general hypotheses can be tested in the following regression equation:

$$Y = b_0 + b_1X_1 + b_2X_2 + e, \quad (1)$$

where Y = political democracy index, 1965,

X_1 = ln energy consumption per capita, 1965,

X_2 = Black's timing of development,

e = residual term.

Hypothesis 1 predicts that b_2 will be positive and significant; that is, the longer a country has been developing the greater its level of democracy. Hypothesis 2 suggests that b_2 will be negative and significant, so that the late developers are more likely to be democratic. The timing of development is correlated with the level of development ($r = 0.76$). This regression allows us to evaluate the general timing hypotheses compared with the effects of development. If the timing of development is more important than the level of development, the standardized regression coefficient for the timing variable should be greater than that for the level of development. If the level of development is more important, the opposite should be found.

The regression results are reported in Table 1. The coefficient for the timing of development variable (b_2) is positive as predicted by the first hypothesis but is not significantly different from zero.¹⁰ In

Table 1. Regression of Political Democracy Index on Black's Time of Development and ln Energy Consumption per Capita

Regressand	R ²	\bar{R}^2	F	Degrees of Freedom	N
Political Democracy 1965	.438	.426	37.4	2, 96	99
Regressor	Regression Coefficient* (Standard Error)		Standardized Regression Coefficient		
Time of Development	.026 (.054)		.056		
ln Energy Consumption per Capita 1965	10.2* (1.93)		.618		
Constant	.464				

* Regression coefficient significant at .05 level.

contrast, the coefficient for the level of development (b_1) is positive and highly significant ($p < 0.01$). This suggests that the *overall* effect of timing is not strongly positive or negative. The level of development is far more important in determining whether a country is democratic or not.

Since there is a moderately high correlation between the timing of development and the level of development, it is possible that multicollinearity is affecting the results. Multicollinearity refers to the interdependency of the independent variables in a regression analysis. When the interdependency is great, it is difficult to separate the unique effects of each collinear variable. As a result, the estimates of the regressor coefficients are likely to have large standard errors and are particularly susceptible to the effects of sampling fluctuations.

In Table 1, the timing of development, but not the development level, has a large standard error relative to the magnitude of its regression coefficient. Since there are only two independent variables in the regression (excluding the constant), the degree of collinearity for each variable is identical. If the correlation between these variables is the only factor leading to the nonsignificance of development timing, then the level of development should also have a large standard error, which it does not. However, it is possible that the particular sample configuration used resulted in the level of development being signifi-

¹⁰ There was some concern that the U.K., which began to develop long before any other country, might act as an outlier having a disproportionate effect on the estimate of the regression coefficients. To investigate this possibility, I reran the regression omitting the U.K. The regression estimates were not significantly different. As a further check on the possible impact of this type of outlier the democracy index was regressed on the natural log of the time of development. Again, no significant differences resulted. In this case it made the most sense to use the unlogged time of development variable including the U.K.

cant. Indeed if multicollinearity is a serious problem in this regression, a change in the sample should lead to very different results.

To test this possibility, I selected a random subsample of the full 99 cases and reran the regression.¹¹ The results were the same: the level of development was significant and development timing was not. Two additional random subsamples were analyzed with the same conclusion.

As an additional test of the general timing hypothesis another regression was run including the Rostow-Collier measure of the timing of development. The following regression equation was tested:

$$Y = b_0 + b_1X_1 + b_2X_2 + e, \quad (2)$$

where Y = political democracy index, 1965,

X_1 = ln energy consumption per capita, 1965,

X_2 = Rostow-Collier's economic take-off date,

e = residual term.

The results are reported in Table 2. As was found with Black's measure, the coefficient for the Rostow-Collier's take-off date is not significantly different from zero and the coefficient for development is positive and significant. Based on these consistent results across samples and measures of development timing, it is unlikely that multicollinearity can explain these findings.

The nonsignificant impact of the timing of development on political democracy does not rule out the possibility that more specific characteristics of development timing may affect democracy. As one possibility, Hypothesis 3 predicts that the greater extent to which a culture is Protestant-based, the more likely it is to be democratic. Hypothesis 4 suggests that a high degree of state controlled economic activity lessens the chances for political democracy. These two more specific hy-

Table 2. Regression of Political Democracy Index on Rostow-Collier's Take-Off Date and ln Energy Consumption per Capita

Regressand	R^2	\bar{R}^2	F	Degrees of Freedom	
					N
Political Democracy 1965	.527	.489	13.9	2, 25	28
Regressor	Regression Coefficient*		Standardized Regression Coefficient		
	(Standard Error)				
"Take-Off" Date	-.099 (.104)		-.234		
ln Energy Consumption per Capita 1965	8.34* (3.90)		.521		
Constant	210				

* Regression coefficient significant at .05 level.

potheses are tested in the following regression equation:

$$Y = b_0 + b_1X_1 + b_3X_3 + b_4X_4 + e, \quad (3)$$

Y = political democracy index, 1965,

X_1 = ln energy consumption per capita, 1965,

X_3 = percentage of population Protestant,

X_4 = state's control of economy, 1960,

e = residual term.

Table 3 presents the results of this regression. Once again the most significant effect is that of the level of development (standardized regression coefficient =

Table 3. Regression of Political Democracy Index on State's Control of the Economy, Percentage of the Population Protestant, and ln Energy Consumption per Capita

Regressand	R^2	\bar{R}^2	F	Degrees of Freedom	
					N
Political Democracy 1965	.492	.475	30.6	3, 95	99
Regressor	Regression Coefficient*		Standardized Regression Coefficient		
	(Standard Error)				
State's Control of the Economy 1960	-1.05* (.472)		-.163		
Percentage Population Protestant	.229* (0.99)		.196		
ln Energy Consumption per Capita 1965	9.20* (1.40)		.559		
Constant	18.0				

* Regression coefficient significant at .05 level.

¹¹ To select the random subsample, I assigned all countries a random number from a uniform distribution between zero and one. Those cases with a random number greater than 0.5 were analyzed.

0.56). However, both the percentage of the population that is Protestant and the state's economic strength measure have significant coefficients ($p < .05$) in the predicted direction. That is, the greater the proportion of the population that is Protestant, the higher the level of democracy, and the greater the proportion of GDP consumed by the government the less the level of democracy.¹² This equation also was estimated including Black's timing of development. The timing of development variable was still found to be insignificant as in Table 1.

Panel Design

Since development, Protestantism and the state's economic control are related to the level of political democracy, it is of interest to see if these same variables are related to *changes* in political democracy. The cross-sectional design is sometimes thought to represent more long-run relationships between variables. Those variables important in explaining cross-sectional variation may not have the same importance in explaining more short-run changes in political democracy. A panel design is one means to investigate this question. In panel analysis the dependent variable at time t is regressed on itself at an earlier time point along with the other independent variables. In this way it is possible to estimate the impact of the other independent variables on the dependent variable, while controlling for the earlier or lagged value of the dependent

Table 4. Panel Regression of Political Democracy Index on Lagged Democracy Index, State's Control of the Economy, Percentage of the Population Protestant, and In Energy Consumption per Capita

Regressand	R ²	\bar{R}^2	F	Degrees of Freedom	N
Political Democracy 1965	.835	.827	108	4, 86	91
Regressor	Regression Coefficient* (Standard Error)		Standardized Regression Coefficient		
Political Democracy 1960	.814* (.061)		.745		
State's Control of the Economy 1960	-.520** (.315)		-.073		
Percentage Population Protestant	.019 (.061)		.017		
In Energy Consumption per Capita 1965	3.75* (.929)		.230		
Constant	-7.76				

* Significant at .05 level.

** Significant at .10 level.

variable. The panel design used is represented in the following equation:

$$Y_t = b_0 + a_1 Y_{t-1} + b_1 X_1 + b_3 X_3 + b_4 X_4 + e, \quad (4)$$

Y_t = political democracy, 1965,

Y_{t-1} = political democracy, 1960,

X_1 = ln energy consumption per capita, 1960,

X_3 = percentage of population Protestant,

X_4 = state's control of economy, 1960,

e = residual term.

The results of this regression are reported in Table 4.¹³ The largest coefficient

¹² There was some concern that there may have been an interaction effect between development level and the state's control of the economy such that highly developed countries with economically strong governments have a different effect than predicted by the linear effects of these variables. For example, some of the social democracies of Europe, such as the U.K., Finland, Sweden, etc., have governments which consume and control a large percentage of GDP and are at high levels of development. Yet, their political systems are relatively democratic. It is possible, then, that a high development level combined with a strong government may have a significant impact. To test this, I reran equation (3) with an interaction term ($X_1 * X_4$) included. The interaction term proved not to be significant. This partially may have resulted because of the interaction term's high correlation with X_1 and X_4 .

¹³ Although panel estimation can provide information on the causes of changes in a dependent variable that are not available from a cross-sectional analysis (Heise, 1970), there are several cautionary remarks to be made. If there are unknown explanatory variables omitted from the equation (4), the residuals are likely to be autocorrelated. Autocorrelated residuals, in conjunction with the lagged dependent variable, will lead to bias and inconsistent estimates of the regression coefficients. With positively autocorrelated residuals the coefficient for the lagged dependent variable is generally biased upward and the remaining explanatory variable effects are biased toward zero (Hibbs, 1974:294-8). In equation (5) this means that the OLS estimate of a_1 , the coefficient of the earlier value of political democracy, is likely to be larger than the true effect and the esti-

is that associated with the lagged value of political democracy. The next largest standardized regression coefficient (0.23) is that for \ln energy consumption per capita. This variable's effect is significant at the 0.01 level. The state strength's regression coefficient is negative and significant at the 0.10 level (but not at the 0.05 level). Finally, the indicator of Protestantism is not significant in explaining the 1960 to 1965 changes in democracy. As was found for the previous regressions, the level of development's effects are more important than Protestantism or the state's control of the economic system. Equation (4) also was estimated including Black's timing of development. Once again it was found to be insignificant.

Although substantial changes in political democracy occurred in a number of countries between 1960 and 1965, a longer lag would allow for more changes in a greater number of countries. Because of data availability, the attempt to estimate any lags longer than five years leads to a tremendous drop in the number of LDCs in the sample. In addition, Monte Carlo simulations by Pelz and Lew (1970) suggest that the true effects of variables in a panel design may be exaggerated if too long a lag is chosen. However, there was some concern that the short lag involved in the estimation may have biased the results against finding stronger effects of Protestantism and the state's control of the economy. For this reason a ten-year lag model also was estimated. In the 49 countries for which data were available, the estimated coefficients for percent Protestant and state's economic control were even less significant than those reported in Table 4. However, if more data becomes available, further research on the lag would be worthwhile.

mated coefficients for development (energy consumption per capita), Protestantism, and state's economic control (b_1 , b_3 , and b_4 , respectively) will be underestimates of the true effects. Unfortunately, the simple panel design used here does not lend itself to the traditional tests of autocorrelation (e.g., Durbin-Watson test). For a more extensive discussion of panel estimation see Hannan and Young (1977).

DISCUSSION AND CONCLUSIONS

A number of social scientists have expressed considerable pessimism about the chances for political democracy in the late developers. The strains under which the latecomers must industrialize are viewed as something best handled by authoritarian governments. On the other hand, another perspective argues that with the diffusion of the democratic ideology over time, the latecomers increasingly will be under pressure to adopt more rather than less democratic forms of government. My research lends no support to either of these generalizations.

However, when more specific characteristics associated with development timing are examined, some significant effects are found. In the cases explored here, I have found support for the hypotheses that the greater the extent to which a culture is Protestant-based the greater the level of political democracy, and the greater the government's control of the economic system the lower the level of democracy.

In a panel analysis of *changes* in political democracy, the state's control of the economic system had negative effects as found in the "cross-sectional" regressions. Protestantism, however, did not appear to have any significant impact. In all of the regressions the most significant variable is the level of development. These results indicate that the level of development is a more important explanatory variable than the timing variables. However, a note of caution must be made in interpreting the null effect of the general timing variable. Although my results do not support the generalizations that conditions have become progressively worse or better for political democracy, these findings do not rule out the possibility that some of the more *specific* characteristics, such as differing cultural systems and economic dependency, have an effect. It is possible that the null effect of the time of development represents a "balancing out" of these positive and negative, more specific characteristics. In failing to find a general timing effect, this research has performed only a first step. Future research in this area should concentrate on

other specific timing variables (e.g., political instability, dependency, and rates of development) that may affect democracy and should compare their effects with development.

APPENDIX

The following is a brief description of the political democracy index for 1965. The 1960 political democracy index was constructed the same way except for a five-year change in time periods. A more detailed discussion of this index can be found in Bollen (1978: chap. 2).

The first component of the index, freedom of the press, is taken from Nixon (1965). The chief criterion for developing the measure is the degree of control normally exercised by any official agency which has the power to interfere with the dissemination and discussion of the news (Nixon, 1960: 17). Countries were rated by a panel of experts in the area of comparative journalism. The panel used reports from the International Press Institute, the Inter-American Press Association, and other country sources.

The second component, freedom of group opposition, classifies countries according to four levels: (1) no parties excluded, (2) one or more minor or "extremist" parties excluded, (3) significant exclusion of parties (or groups), and (4) no parties or all but the dominant party and its satellites excluded (Banks, 1971: segment 10, field 0). The average scores from 1964 to 1966 are used. If the measure is not available for three years, the average for those years with data in the three-year period is used. For this Bank's variable and the others used in the index, numerous country sources, newspapers, and journals were consulted for the ranking of nations. For a list of the primary sources see Banks (1971: Appendix 2).

The next component is a measure of elite political power as reflected in government sanctions. The sanctions include such actions as the closing of newspapers, censorship, restrictions on political participation, curfews, and the banning of groups opposing the government (Taylor and Hudson, 1971). Basic data for this indicator are in Taylor and Hudson (1971). A three-year average from 1964 to 1966 is used. The use of this variable as it appears in the original data set is biased against those societies which are relatively free to begin with. That is, those societies which are relatively free have more to lose than societies that already have many restrictions. In

order to correct for this bias, the number of elite sanctions is subtracted from an average "freedom" score formed by a country's freedom of the press and freedom of group opposition measures. This resulted in a higher correlation with the other five components than was found using the unadjusted elite sanction variable or its log.¹⁴

The fourth component, fairness of elections, ranges from: (1) no elections, (2) rigged elections, (3) substantial irregularity in elections, and (4) relatively free and competitive elections. This variable is the electoral irregularity variable for 1965 in Taylor and Hudson (1971). If no elections were held from 1961 to 1967 a country was scored as having no elections for 1965. Information on the number of elections during this period is from Taylor and Hudson (1971).

Effective executive selection is scored in two categories—elective and nonelective. This variable is from Banks (1971: segment 1, field j). The original "indirect elections" category was combined with the "elective." The "nonelective" category includes those societies having no elections from 1961 to 1967. A three-year average for this measure is computed for the years 1964 to 1966.

The final component, legislative selection, is formed by the combination of two variables. The first variable is a dichotomy describing whether the method of selecting the legislative body is nonelective or elective (Banks, 1971: segment 1, field p). Those countries in which no legislative body existed were scored as nonelective. The second variable used in this component is the effectiveness of the legislature (Banks, 1971: segment 10, field 1). Three levels of effectiveness are used: (1) ineffective, (2) partially effective, and (3) effective. The simple sum of these two measures has a questionable relationship to political democracy. An elected legislature that is powerless or ineffective does not indicate a

¹⁴ Using this corrective procedure involves a trade-off. The trade-off is that the correlations between the corrected elite sanctions and freedom of the press and freedom of group opposition are probably increased due to the use of these latter two freedoms in the corrective procedure. The benefit of the procedure is that the original government sanction variable by itself is of questionable validity as an indicator of political democracy because of its bias against those countries which have the most freedom to begin with. It is my judgment that the benefit of increasing validity outweighs any increase in the two correlations caused by a common component.

Table A1. Correlation Matrix of the Six Components in the 1960 Political Democracy Index

		X1	X2	X3	X4	X5	X6
Press Freedom	(X1)	1.0	.77	.79	.78	.61	.77
Freedom of Group Opposition	(X2)	.77	1.0	.86	.65	.54	.79
Elite Sanctions	(X3)	.79	.86	1.0	.68	.60	.76
Fairness of Elections	(X4)	.78	.65	.68	1.0	.58	.69
Executive Selection	(X5)	.61	.54	.60	.58	1.0	.68
Legislature Selection	(X6)	.77	.79	.76	.69	.68	1.0

All correlations significant at .001 level.

democratic system. Nor does an effective legislature that is appointed indicate democracy. Legislatures that are *both* elective and effective are more valid measures of political democracy. To capture the extent to which both conditions are met, the two variables are multiplied together to derive the sixth and final component of the political democracy index.

All six components were scored so that they ranged from zero to 100 with 100 indicating a high level of political democracy. Any country which had more than three of the six components missing were dropped. Values were estimated for nations having three or less missing components. Less than 10% of the variables needed to construct the index were estimated. The correlation matrix between the six components for 1960 is presented in Table A1.

REFERENCES

- Adelman, I. and C. T. Morris
1973 *Economic Growth and Social Equity in Developing Countries*. Stanford: Stanford University Press.
- Banks, Arthur S.
1971 *Cross-Polity Time-Series Data*. Cambridge, Ma.: M.I.T. Press.
- Baran, P.
1956 *The Political Economy of Growth*. New York: Monthly Review Press.
- Bendix, Reinhard
1976 "The mandate to rule: an introduction." *Social Forces* 55:242-56.
- Black, Cyril E.
1966 *The Dynamics of Modernization*. New York: Harper and Row.
- Bollen, Kenneth A.
1978 *Political Democracy: A Macro-Theoretical and Empirical Analysis*. Ph.D. dissertation, Department of Sociology, Brown University.
- Chase-Dunn, C.
1975 "The effects of international economic dependence on development and inequality: a cross-national study." *American Sociological Review* 40:720-8.
- Coleman, J. S.
1960 "Conclusion: the political systems of the developing area." Pp. 532-81 in G. A. Almond and J. S. Coleman (eds.), *The Politics of Developing Areas*. Princeton: Princeton University Press.
- Collier, D.
1975 "Timing of economic growth and regime characteristics in Latin America." *Comparative Politics* 7:331-59.
- Cottrell, F.
1953 *Energy and Society*. New York: McGraw-Hill.
1960 "The technological and societal basis of aging." Pp. 92-119 in Clark Tibbets (ed.), *Handbook of Social Gerontology*. Chicago: University of Chicago Press.
- Coulter, P.
1975 *Social Mobilization and Liberal Democracy*. Lexington: Lexington Books.
- Cronbach, L. J.
1951 "Coefficient alpha and the internal structure of tests." *Psychometrika* 16:297-334.
- Cutright, Phillips
1963 "National political development." *American Sociological Review* 28:253-64.
- Cutright, Phillips and James A. Wiley
1969 "Modernization and political representation: 1927-1966." *Studies in Comparative International Development* 5:23-44.
- Darmstadter, J.
1971 *Energy in the World Economy: A Statistical Review of Trends in Output, Trade and Consumption since 1925*. Baltimore: Johns Hopkins Press.
- Davis, K.
1956 "The amazing decline of mortality in underdeveloped areas." *American Economic Review* 46:305-18.
- Eisenstadt, S. N.
1964 "Breakdowns of modernization." *Economic Development and Cultural Change* 12:345-67.
- Frank, A. G.
1959 "Industrial capital stocks and energy consumption." *Economic Journal* 69:170-3.
1973 "Latin America: underdevelopment or revolution." Reprint 208. Warner Modular Publication.
- Galtung, J.
1971 "A structural theory of imperialism." *Journal of Peace Research* 8:81-117.
- Gray, R. H.
1974 "The decline of mortality in Ceylon and the demographic effects of malaria control." *Population Studies* 28:205-29.
- Hannan, Michael T. and Alice A. Young
1977 "Estimation in panel models: results on pooling cross-sections and time series." Pp. 52-83 in David R. Heise (ed.), *Sociological Methodology 1977*. San Francisco: Jossey-Bass.
- Heilbroner, Robert L.
1974 *An Inquiry into the Human Prospect*. New York: Norton.
- Heise, D. R.
1970 "Causal inferences from panel data." Pp. 3-27 in E. Borgatta and G. Bohrnstedt (eds.), *Sociological Methodology 1970*. San Francisco: Jossey-Bass.
- Hewitt, C.
1977 "The effect of political democracy and social democracy on equality in industrial societies: a cross-national comparison." *American Sociological Review* 42:450-64.
- Hibbs, Douglas A., Jr.
1974 "Problems of statistical estimation and causal inference in time-series regression models." Pp. 252-308 in Herbert L. Costner (ed.), *Sociological Methodology 1973-74*. San Francisco: Jossey-Bass.
- Huntington, S. P.
1968 *Political Order in Changing Societies*. New Haven: Yale University Press.
- Jackman, Robert W.
1973 "On the relation of economic development

- to democratic performance." *American Journal of Political Science* 17:611-21.
- 1974 "Political democracy and social equality: a comparative analysis." *American Sociological Review* 39:29-45.
- 1975 *Politics and Social Equality: A Comparative Analysis*. New York: Wiley.
- Kornhauser, W.
1959 *The Politics of Mass Society*. New York: McGraw-Hill.
- Landes, David S.
1969 *The Unbound Prometheus*. London: Cambridge University Press.
- Lenski, G.
1966 *Power and Privilege*. New York: McGraw-Hill.
- Lenski, Gerhard and Jean Lenski
1974 *Human Societies*. New York: McGraw-Hill.
- Lerner, Daniel
1958 *The Passing of Traditional Society*. Glencoe: Free Press.
- Levy, Marion J., Jr.
1966 *Modernization and the Structure of Societies*. Princeton: Princeton University Press.
- Lipset, Seymour
1959 "Some social requisites of democracy." *American Political Science Review* 53:69-105.
1963 *Political Man*. Garden City: Anchor Books.
- McCrone, D. J. and C. F. Cnudde
1967 "Toward a communications theory of democratic political development." *American Political Science Review* 61:72-9.
- May, J. D.
1973 "Of the conditions and measures of democracy." Morristown: General Learning.
- Moore, Barrington, Jr.
1966 *Social Origins of Dictatorship and Democracy*. Boston: Beacon Press.
- Neubauer, D. C.
1967 "Some conditions of democracy." *American Political Science Review* 61:1002-9.
- Nixon, Raymond B.
1960 "Factors related to freedom in national press systems." *Journalism Quarterly* 37:13-28.
1965 "Freedom in the world's press: a fresh appraisal with new data." *Journalism Quarterly* 42:3-15, 118-9.
- Pelz, D. C. and R. A. Lew
1970 "Heise's causal model applied." Pp. 28-37 in E. F. Borgatta and G. W. Bohrnstedt (eds.), *Sociological Methodology* 1970. San Francisco: Jossey-Bass.
- Rostow, W. W.
1961 *The Stages of Economic Growth*. London: Cambridge University Press.
1971 *Politics and Stages of Growth*. London: Cambridge University Press.
- Rubinson, Richard
1976 "The world economy and the distribution of income within states: a cross-national study." *American Sociological Review* 41:638-59.
1978 "State boundaries and the world economy: reply to Stack." *American Sociological Review* 43:614-5.
- Rubinson, R. and D. Quinlan
1977 "Democracy and social inequality: a reanalysis." *American Sociological Review* 42:611-23.
- Schumpeter, Joseph A.
1950 *Capitalism, Socialism and Democracy*. New York: Harper and Row.
- de Schweinitz, Karl
1964 *Industrialization and Democracy*. Glencoe: Free Press.
- Seers, Dudley and Leonard Joy (eds.)
1970 *Development in a Divided World*. Baltimore: Penguin Books.
- Smith, A. K.
1969 "Socioeconomic development and political democracy." *Midwest Journal of Political Science* 30:95-125.
- Stack, S.
1978 "Internal political organization and the world economy of income inequality." *American Sociological Review* 43:271-2.
- Taylor, Charles L. and Michael C. Hudson
1971 *World Handbook of Political and Social Indicators II*. Inter-University Consortium for Political and Social Research. Ann Arbor: University of Michigan.
1972 *World Handbook of Political and Social Indicators*. 2nd ed. New Haven: Yale University Press.
- Wallerstein, I.
1974 *The Modern World System*. New York: Academic Press.
1977 "Rural economy in modern world-society." *Studies in Comparative International Development* 12:29-40.
- World Bank
1976 *World Tables* 1976. Baltimore: Johns Hopkins University Press.

SOCIAL CHANGE AND CRIME RATE TRENDS: A ROUTINE ACTIVITY APPROACH*

LAWRENCE E. COHEN AND MARCUS FELSON

University of Illinois, Urbana

American Sociological Review 1979, Vol. 44 (August):588-608.

In this paper we present a "routine activity approach" for analyzing crime rate trends and cycles. Rather than emphasizing the characteristics of offenders, with this approach we concentrate upon the circumstances in which they carry out predatory criminal acts. Most criminal acts require convergence in space and time of *likely offenders*, *suitable targets* and the *absence of capable guardians* against crime. Human ecological theory facilitates an investigation into the way in which social structure produces this convergence, hence allowing illegal activities to feed upon the legal activities of everyday life. In particular, we hypothesize that the dispersion of activities away from households and families increases the opportunity for crime and thus generates higher crime rates. A variety of data is presented in support of the hypothesis, which helps explain crime rate trends in the United States 1947-1974 as a byproduct of changes in such variables as labor force participation and single-adult households.

INTRODUCTION

In its summary report the National Commission on the Causes and Prevention of Violence (1969: xxxvii) presents an important sociological paradox:

Why, we must ask, have urban violent crime rates increased substantially during the past decade when the conditions that are supposed to cause violent crime have not worsened—have, indeed, generally improved?

The Bureau of the Census, in its latest report on trends in social and economic conditions in metropolitan areas, states that most "indicators of well-being point toward progress in the cities since 1960." Thus, for example, the proportion of blacks in cities who completed high school rose from 43 percent in 1960 to 61 percent in 1968; unemployment rates dropped significantly between 1959 and 1967 and the median family income of blacks in cities increased from 61 percent to 68 percent of the median white

family income during the same period. Also during the same period the number of persons living below the legally-defined poverty level in cities declined from 11.3 million to 8.3 million.

Despite the general continuation of these trends in social and economic conditions in the United States, the *Uniform Crime Report* (FBI, 1975:49) indicates that between 1960 and 1975 reported rates of robbery, aggravated assault, forcible rape and homicide increased by 263%, 164%, 174%, and 188%, respectively. Similar property crime rate increases reported during this same period¹ (e.g., 200% for burglary rate) suggest that the paradox noted by the Violence Commission applies to nonviolent offenses as well.

¹ Though official data severely underestimate crime, they at least provide a rough indicator of trends over time in the volume of several major felonies. The possibility that these data also reflect trends in rates at which offenses are reported to the police has motivated extensive victimology research (see Nettler, 1974; and Hindelang, 1976, for a review). This work consistently finds that seriousness of offense is the strongest determinant of citizen reporting to law enforcement officials (Skogan, 1976: 145; Hindelang, 1976: 401). Hence the upward trend in official crime rates since 1960 in the U.S. may reflect increases in *both* the volume and seriousness of offenses. Though disaggregating these two components may not be feasible, one may wish to interpret observed trends as generated largely by both.

* Address all communications to: Lawrence E. Cohen; Department of Sociology; University of Illinois; Urbana, IL 61801.

For their comments, we thank David J. Bordua, Ross M. Stolzenberg, Christopher S. Dunn, Kenneth C. Land, Robert Schoen, Amos Hawley, and an anonymous reviewer. Funding for this study was provided by these United States Government grants: National Institute for Mental Health 1-R01-MH31117-01; National Science Foundation, SOC-77-13261; and United States Army RI/DAHC 19-76-G-0016. The authors' name order is purely alphabetical.

In the present paper we consider these paradoxical trends in crime rates in terms of changes in the "routine activities" of everyday life. We believe the structure of such activities influences criminal opportunity and therefore affects trends in a class of crimes we refer to as *direct-contact predatory violations*. Predatory violations are defined here as illegal acts in which "someone definitely and intentionally takes or damages the person or property of another" (Glaser, 1971:4). Further, this analysis is confined to those predatory violations involving direct physical contact between at least one offender and at least one person or object which that offender attempts to take or damage.

We argue that structural changes in routine activity patterns can influence crime rates by affecting the convergence in space and time of the three minimal elements of direct-contact predatory violations: (1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians against a violation. We further argue that the lack of any one of these elements is sufficient to prevent the successful completion of a direct-contact predatory crime, and that the convergence in time and space of suitable targets and the absence of capable guardians may even lead to large increases in crime rates without necessarily requiring any increase in the structural conditions that motivate individuals to engage in crime. That is, if the proportion of motivated offenders or even suitable targets were to remain stable in a community, changes in routine activities could nonetheless alter the likelihood of their convergence in space and time, thereby creating more opportunities for crimes to occur. Control therefore becomes critical. If controls through routine activities were to decrease, illegal predatory activities could then be likely to increase. In the process of developing this explanation and evaluating its consistency with existing data, we relate our approach to classical human ecological concepts and to several earlier studies.

The Structure of Criminal Activity

Sociological knowledge of how community structure generates illegal acts has

made little progress since Shaw and McKay and their colleagues (1929) published their pathbreaking work, *Delinquency Areas*. Variations in crime rates over space long have been recognized (e.g., see Guerry, 1833; Quetelet, 1842), and current evidence indicates that the pattern of these relationships within metropolitan communities has persisted (Reiss, 1976). Although most spatial research is quite useful for describing crime rate patterns and providing post hoc explanations, these works seldom consider—conceptually or empirically—the fundamental human ecological character of illegal acts as *events* which occur at specific locations in *space and time*, involving specific persons and/or objects. These and related concepts can help us to develop an extension of the human ecological analysis to the problem of explaining changes in crime rates over time. Unlike many criminological inquiries, we do not examine why individuals or groups are inclined criminally, but rather we take criminal inclination as given and examine the manner in which the spatio-temporal organization of social activities helps people to translate their criminal inclinations into action. Criminal violations are treated here as routine activities which share many attributes of, and are interdependent with, other routine activities. This interdependence between the structure of illegal activities and the organization of everyday subsistence activities leads us to consider certain concepts from human ecological literature.

Selectec' Concepts from Hawley's Human Ecological Theory

While criminologists traditionally have concentrated on the *spatial* analysis of crime rates within metropolitan communities, they seldom have considered the *temporal* interdependence of these acts. In his classic theory of human ecology, Amos Hawley (1950) treats the community not simply as a unit of territory but rather as an organization of symbiotic and commensalistic relationships as human activities are performed over both space and time.

Hawley identified three important temporal components of community structure: (1) *rhythm*, the regular periodicity with which events occur, as with the rhythm of travel activity; (2) *tempo*, the number of events per unit of time, such as the number of criminal violations per day on a given street; and (3) *timing*, the coordination among different activities which are more or less interdependent, such as the coordination of an offender's rhythms with those of a victim (Hawley, 1950:289; the examples are ours). These components of temporal organization, often neglected in criminological research, prove useful in analyzing how illegal tasks are performed—a utility which becomes more apparent after noting the spatio-temporal requirements of illegal activities.

The Minimal Elements of Direct-Contact Predatory Violations

As we previously stated, despite their great diversity, direct-contact predatory violations share some important requirements which facilitate analysis of their structure. Each successfully completed violation minimally requires an *offender* with both criminal inclinations and the ability to carry out those inclinations, a person or object providing a *suitable target* for the offender, and *absence of guardians* capable of preventing violations. We emphasize that the lack of any one of these elements normally is sufficient to prevent such violations from occurring.² Though guardianship is implicit in everyday life, it usually is marked by the absence of violations; hence it is easy to overlook. While police action is analyzed widely, guardianship by ordinary citizens of one another and of property as they go about routine activities may be one of the most neglected elements in sociological research on crime, especially since it links seemingly unre-

lated social roles and relationships to the occurrence or absence of illegal acts.

The conjunction of these minimal elements can be used to assess how social structure may affect the tempo of each type of violation. That is, the probability that a violation will occur at any specific time and place might be taken as a function of the convergence of likely offenders and suitable targets in the absence of capable guardians. Through consideration of how trends and fluctuations in social conditions affect the frequency of this convergence of criminogenic circumstances, an explanation of temporal trends in crime rates can be constructed.

The Ecological Nature of Illegal Acts

This ecological analysis of direct-contact predatory violations is intended to be more than metaphorical. In the context of such violations, people, gaining and losing sustenance, struggle among themselves for property, safety, territorial hegemony, sexual outlet, physical control, and sometimes for survival itself. The interdependence between offenders and victims can be viewed as a predatory relationship between functionally dissimilar individuals or groups. Since predatory violations fail to yield any net gain in sustenance for the larger community, they can only be sustained by feeding upon other activities. As offenders cooperate to increase their efficiency at predatory violations and as potential victims organize their resistance to these violations, both groups apply the symbiotic principle to improve their sustenance position. On the other hand, potential victims of predatory crime may take evasive actions which encourage offenders to pursue targets other than their own. Since illegal activities must feed upon other activities, the spatial and temporal structure of routine legal activities should play an important role in determining the location, type and quantity of illegal acts occurring in a given community or society. Moreover, one can analyze how the structure of community organization as well as the level of technology in a society provide the circumstances under which crime can thrive. For example, technology and organization

² The analytical distinction between target and guardian is not important in those cases where a personal target engages in self-protection from direct-contact predatory violations. We leave open for the present the question of whether a guardian is effective or ineffective in all situations. We also allow that various guardians may primarily supervise offenders, targets or both. These are questions for future examination.

affect the capacity of persons with criminal inclinations to overcome their targets, as well as affecting the ability of guardians to contend with potential offenders by using whatever protective tools, weapons and skills they have at their disposal. Many technological advances designed for legitimate purposes—including the automobile, small power tools, hunting weapons, highways, telephones, etc.—may enable offenders to carry out their own work more effectively or may assist people in protecting their own or someone else's person or property.

Not only do routine legitimate activities often provide the wherewithal to commit offenses or to guard against others who do so, but they also provide offenders with suitable targets. Target suitability is likely to reflect such things as value (i.e., the material or symbolic desirability of a personal or property target for offenders), physical visibility, access, and the inertia of a target against illegal treatment by offenders (including the weight, size, and attached or locked features of property inhibiting its illegal removal and the physical capacity of personal victims to resist attackers with or without weapons). Routine production activities probably affect the suitability of consumer goods for illegal removal by determining their value and weight. Daily activities may affect the location of property and personal targets in visible and accessible places at particular times. These activities also may cause people to have on hand objects that can be used as weapons for criminal acts or self-protection or to be preoccupied with tasks which reduce their capacity to discourage or resist offenders.

While little is known about conditions that affect the convergence of potential offenders, targets and guardians, this is a potentially rich source of propositions about crime rates. For example, daily work activities separate many people from those they trust and the property they value. Routine activities also bring together at various times of day or night persons of different background, sometimes in the presence of facilities, tools or weapons which influence the commission or avoidance of illegal acts. Hence, the timing of work, schooling and leisure may

be of central importance for explaining crime rates.

The ideas presented so far are not new, but they frequently are overlooked in the theoretical literature on crime. Although an investigation of the literature uncovers significant examples of descriptive and practical data related to the routine activities upon which illegal behavior feeds, these data seldom are treated within an analytical framework. The next section reviews some of this literature.

RELATION OF THE ROUTINE ACTIVITY APPROACH TO EXISTANT STUDIES

A major advantage of the routine activity approach presented here is that it helps assemble some diverse and previously unconnected criminological analyses into a single substantive framework. This framework also serves to link illegal and legal activities, as illustrated by a few examples of descriptive accounts of criminal activity.

Descriptive Analyses

There are several descriptive analyses of criminal acts in criminological literature. For example, Thomas Reppetto's (1974) study, *Residential Crime*, considers how residents supervise their neighborhoods and streets and limit access of possible offenders. He also considers how distance of households from the central city reduces risks of criminal victimization. Reppetto's evidence—consisting of criminal justice records, observations of comparative features of geographic areas, victimization survey data and offender interviews—indicates that offenders are very likely to use burglary tools and to have at least minimal technical skills, that physical characteristics of dwellings affect their victimization rates, that the rhythms of residential crime rate patterns are marked (often related to travel and work patterns of residents), and that visibility of potential sites of crime affects the risk that crimes will occur there. Similar findings are reported by Pope's (1977a; 1977b) study of burglary in California and by Scarr's (1972) study of burglary in and around the District of Columbia. In addi-

tion, many studies report that architectural and environmental design as well as community crime programs serve to decrease target suitability and increase capable guardianship (see, for example, Newman, 1973; Jeffery, 1971; Washnis, 1976), while many biographical or autobiographical descriptions of illegal activities note that lawbreakers take into account the nature of property and/or the structure of human activities as they go about their illegal work (see, e.g., Chambliss, 1972; Klockars, 1974; Sutherland, 1937; Letkemann, 1973; Jackson, 1969; Martin, 1952; Maurer, 1964; Cameron, 1964; Williamson, 1968).

Evidence that the spatio-temporal organization of society affects patterns of crime can be found in several sources. Strong variations in specific predatory crime rates from hour to hour, day to day, and month to month are reported often (e.g., Wolfgang, 1958; Amir, 1971; Rappetto, 1974; Scarr, 1972; FBI, 1975; 1976), and these variations appear to correspond to the various tempos of the related legitimate activities upon which they feed. Also at a microsociological level, Short and Strodtbeck (1965: chaps. 5 and 11) describe opportunities for violent confrontations of gang boys and other community residents which arise in the context of community leisure patterns, such as "quarter parties" in black communities, and the importance, in the calculus of decision making employed by participants in such episodes, of low probabilities of legal intervention. In addition, a wealth of empirical evidence indicates strong spatial variations over community areas in crime and delinquency rates³ (for an excellent discussion and re-

view of the literature on ecological studies of crimes, see Wilks, 1967). Recently, Albert Reiss (1976) has argued convincingly that these spatial variations (despite some claims to the contrary) have been supported consistently by both official and unofficial sources of data. Reiss further cites victimization studies which indicate that offenders are very likely to select targets not far from their own residence (see USDJ, 1974a; 1974b; 1974c).

Macrolevel Analyses of Crime Trends and Cycles

Although details about how crime occurs are intrinsically interesting, the important analytical task is to learn from these details how illegal activities carve their niche within the larger system of activities. This task is not an easy one. For example, attempts by Bonger (1916), Durkheim (1951; 1966), Henry and Short (1954), and Fleisher (1966) to link the rate of illegal activities to the economic condition of a society have not been completely successful. Empirical tests of the relationships postulated in the above studies have produced inconsistent results which some observers view as an indication that the level of crime is not related systematically to the economic conditions of a society (Mansfield et al., 1974: 463; Cohen and Felson, 1979).

It is possible that the wrong economic and social factors have been employed in these macro studies of crime. Other researchers have provided stimulating alternative descriptions of how social change affects the criminal opportunity structure, thereby influencing crime rates in particular societies. For example, at the beginning of the nineteenth century, Patrick Colquhoun (1800) presented a detailed, lucid description and analysis of crime in the London metropolitan area and suggestions for its control. He assembled substantial evidence that London was experiencing a massive crime wave attributable to a great increment in the assemblage and

³ One such ecological study by Sarah Boggs (1965) presents some similar ideas in distinguishing *familiarity* of offenders with their targets and *profitability* of targets as two elements of crime occurrence. Boggs's work stands apart from much research on the ecology of crime in its consideration of crime occurrence rates separately from offender rates. The former consist of the number of offenses committed in a given area per number of suitable targets within that area (as estimated by various indicators). The latter considers the residence of offenders in computing the number of offenders per unit of population. Boggs examines the correlations between crime occurrence rates and offender rates for several of-

fenses in St. Louis and shows that the two are often independent. It appears from her analysis that *both* target and offender characteristics play a central role in the location of illegal activity.

movement of valuable goods through its ports and terminals.

A similar examination of crime in the period of the English industrial expansion was carried out by a modern historian, J. J. Tobias (1967), whose work on the history of crime in nineteenth century England is perhaps the most comprehensive effort to isolate those elements of social change affecting crime in an expanding industrial nation. Tobias details how far-reaching changes in transportation, currency, technology, commerce, merchandising, poverty, housing, and the like, had tremendous repercussions on the amount and type of illegal activities committed in the nineteenth century. His thesis is that structural transformations either facilitated or impeded the opportunities to engage in illegal activities. In one of the few empirical studies of how recent social change affects the opportunity structure for crime in the United States, Leroy Gould (1969) demonstrated that the increase in the circulation of money and the availability of automobiles between 1921 and 1965 apparently led to an increase in the rate of bank robberies and auto thefts, respectively. Gould's data suggest that these relationships are due more to the abundance of opportunities to perpetrate the crimes than to short-term fluctuations in economic activities.

Although the sociological and historical studies cited in this section have provided some useful *empirical* generalizations and important insights into the incidence of crime, it is fair to say that they have not articulated systematically the *theoretical* linkages between routine legal activities and illegal endeavors. Thus, these studies cannot explain how changes in the larger social structure generate changes in the opportunity to engage in predatory crime and hence account for crime rate trends.⁴

To do so requires a conceptual framework such as that sketched in the preceding section. Before attempting to demonstrate the feasibility of this approach with macrolevel data, we examine available microlevel data for its consistency with the major assumptions of this approach.

Microlevel Assumptions of the Routine Activity Approach

The theoretical approach taken here specifies that crime rate trends in the post-World War II United States are related to patterns of what we have called routine activities. We define these as any recurrent and prevalent activities which provide for basic population and individual needs, whatever their biological or cultural origins. Thus routine activities would include formalized work, as well as the provision of standard food, shelter, sexual outlet, leisure, social interaction, learning and childrearing. These activities may go well beyond the minimal levels needed to prevent a population's extinction, so long as their prevalence and recurrence makes them a part of everyday life.

Routine activities may occur (1) at home, (2) in jobs away from home, and (3) in other activities away from home. The latter may involve primarily household members or others. We shall argue that, since World War II, the United States has experienced a major shift of routine activities away from the first category into the remaining ones, especially those nonhousehold activities involving nonhousehold members. In particular, we shall argue that this shift in the structure of routine activities increases the probability that motivated offenders will converge in space and time with suitable targets in the absence of capable guardians, hence contributing to significant increases in the

⁴ The concept of the opportunity for crime contained in the above research and in this study differs considerably from the traditional sociological usage of the *differential opportunity* concept. For example, Cloward and Ohlin (1960) employed this term in discussing how legitimate and illegitimate opportunities affect the resolution of adjustment problems leading to gang delinquency. From their viewpoint, this resolution depends upon the kind of social support for one or another type of illegitimate activity that is

given at different points in the social structure (Cloward and Ohlin, 1960: 151). Rather than circumstantial determinants of crime, they use differential opportunity to emphasize structural features which motivate offenders to perpetrate certain types of crimes. Cloward and Ohlin are largely silent on the interaction of this motivation with target suitability and guardianship as this interaction influences crime rates.

direct-contact predatory crime rates over these years.

If the routine activity approach is valid, then we should expect to find evidence for a number of empirical relationships regarding the nature and distribution of predatory violations. For example, we would expect routine activities performed within or near the home and among family or other primary groups to entail lower risk of criminal victimization because they enhance guardianship capabilities. We should also expect that routine daily activities affect the location of property and personal targets in visible and accessible places at particular times, thereby influencing their risk of victimization. Furthermore, by determining their size and weight and in some cases their value, routine production activities should affect the suitability of consumer goods for illegal removal. Finally, if the routine activity approach is useful for explaining the paradox presented earlier, we should find that the circulation of people and property, the size and weight of consumer items etc., will parallel changes in crime rate trends for the post-World War II United States.

The veracity of the routine activity approach can be assessed by analyses of both microlevel and macrolevel interdependencies of human activities. While consistency at the former level may appear noncontroversial, or even obvious, one nonetheless needs to show that the approach does not contradict existing data before proceeding to investigate the latter level.

EMPIRICAL ASSESSMENT

Circumstances and Location of Offenses

The routine activity approach specifies that household and family activities entail lower risk of criminal victimization than nonhousehold-nonfamily activities, despite the problems in measuring the former.⁵

⁵ Recent research indicates the existence of substantial quantities of family violence which remains outside of UCR data (see annotated bibliography of family violence in Lystad, 1974). While we cannot rule out the likelihood that much family violence is concealed from victimization surveys, the latter capture information absent from police data and still

National estimates from large-scale government victimization surveys in 1973 and 1974 support this generalization (see methodological information in Hindelang et al., 1976: Appendix 6). Table 1 presents several incident-victimization rates per 100,000 population ages 12 and older. Clearly, the rates in Panels A and B are far lower at or near home than elsewhere and far lower among relatives than others. The data indicate that risk of victimization varies directly with social distance between offender and victim. Panel C of this table indicates, furthermore, that risk of lone victimization far exceeds the risk of victimization for groups. These relationships are strengthened by considering time budget evidence that, on the average, Americans spend 16.26 hours per day at home, 1.38 hours on streets, in parks, etc., and 6.36 hours in other places (Szalai, 1972:795). Panel D of Table 1 presents our estimates of victimization per billion person-hours spent in such locations.⁶ For example, personal larceny

indicate that nonfamily members are usually much more dangerous than family members are to each other (see text). Also, when family violence leads to death, its suppression becomes quite difficult. The murder circumstances data indicate that about two-thirds of killings involve nonrelatives. Without denying the evidence that the level of family violence is far greater than police reports would indicate, available data also suggest that time spent in family activities within households incurs less risk of victimization than many alternative activities in other places. In addition, many of the most common offenses (such as robbery and burglary) always have been recognized as usually involving nonfamily members.

⁶ Billion person-hours can easily be conceptualized as 1,000,000 persons spending 1,000 hours each (or about 42 days) in a given location (Szalai, 1972:795). Fox obtained these data from a 1966 time budget study in 44 American cities. The study was carried out by the Survey Research Center, the University of Michigan. We combined four subsamples in computing our figures. We combined activities into three locations, as follows: (1) at or just outside home; (2) at another's home, restaurants or bars, or indoor leisure; (3) in streets, parks, or outdoor leisure. Our computing formula was

$$Q = [(R \div 10^5) \div (A \cdot 365)] \cdot 10^9,$$

where Q is the risk per billion person-hours; R is the victimization rate, reported per 10⁵ persons in Hindelang et al. (1976: Table 318); A is the hours spent per location calculated from Szalai (1972: 795); 365 is the multiplier to cover a year's exposure to risk; and 10⁹ converts risk per person-hour to billion person-hours.

Table 1. Incident-Specific Risk Rates for Rape, Robbery, Assault and Personal Larceny with Contact, United States, 1974

		Rape	Robbery	Assault	Personal Larceny with Contact	Total
A.*						
PLACE OF RESIDENCE	In or near home	63	129	572	75	839
	Elsewhere	119	584	1,897	1,010	3,610
B.						
VICTIM-OFFENDER RELATIONSHIP	*(Lone Offender)					
	Relative	7	13	158	5	183
	Well Known	23	30	333	30	416
	Casual Acquaintance	11	26	308	25	370
	Don't Know/Sight Only	106	227	888	616	1,837
	(Multiple Offender)					
	Any known	10***	68	252	43	373
	All strangers	25***	349	530	366	1,270
C.*						
NUMBER OF VICTIMS	one	179	647	2,116	1,062	4,004
	Two	3	47	257	19	326
	Three	0	13	53	3	09
	Four Plus	0	6	43	1	50
D.**						
LOCATION AND RELATIONSHIP (sole offender only)	Home, Stranger	61	147	345	103	654
	Home, Nonstranger	45	74	620	22	761
	Street, Stranger	1,370	7,743	15,684	7,802	32,460
	Street, Nonstranger	179	735	5,777	496	7,167
	Elsewhere, Stranger	129	513	1,934	2,455	4,988
	Elsewhere, Nonstranger	47	155	1,544	99	1,874

* * Calculated from Handelang et al., 1977: Tables 3.16, 3.18, 3.27, 3.28. Rates are per 100,000 persons ages 12 and over.

** See fn. 6 for source. Rates are per billion person-hours in stated locations.

*** Based on white data only due to lack of suitable sample size for nonwhites as victims of rape with multiple offenders.

rates (with contact) are 350 times higher at the hands of strangers in streets than at the hands of nonstrangers at home. Separate computations from 1973 victimization data (USDJ, 1976: Table 48) indicate that there were two motor vehicle thefts per million vehicle-hours parked at or near home, 55 per million vehicle-hours in streets, parks, playgrounds, school grounds or parking lots, and 12 per million vehicle-hours elsewhere. While the direction of these relationships is not surprising, their magnitudes should be noted. It appears that risk of criminal victimization varies dramatically among the circumstances and locations in which people place themselves and their property.

Target Suitability

Another assumption of the routine activity approach is that target suitability influences the occurrence of direct-contact predatory violations. Though we lack data

to disaggregate all major components of target suitability (i.e., value, visibility, accessibility and inertia), together they imply that expensive and movable durables, such as vehicles and electronic appliances, have the highest risk of illegal removal.

As a specific case in point, we compared the 1975 composition of stolen property reported in the Uniform Crime Report (FBI, 1976: Tables 26-7) with national data on personal consumer expenditures for goods (CEA, 1976: Tables 13-16) and to appliance industry estimates of the value of shipments the same year (*Merchandising Week*, 1976). We calculated that \$26.44 in motor vehicles and parts were stolen for each \$100 of these goods consumed in 1975, while \$6.82 worth of electronic appliances were stolen per \$100 consumed. Though these estimates are subject to error in citizen and police estimation, what is important here is their size relative to other rates. For example, only

8¢ worth of nondurables and 12¢ worth of furniture and nonelectronic household durables were stolen per \$100 of each category consumed, the motor vehicle risk being, respectively, 330 and 220 times as great. Though we lack data on the "stocks" of goods subject to risk, these "flow" data clearly support our assumption that vehicles and electronic appliances are greatly overrepresented in thefts.

The 1976 Buying Guide issue of *Consumer Reports* (1975) indicates why electronic appliances are an excellent retail value for a thief. For example, a Panasonic car tape player is worth \$30 per lb., and a Phillips phonograph cartridge is valued at over \$5,000 per lb., while large appliances such as refrigerators and washing machines are only worth \$1 to \$3 per lb. Not surprisingly, burglary data for the District of Columbia in 1969 (Scarr, 1972: Table 9) indicate that home entertainment items alone constituted nearly four times as many stolen items as clothing; food, drugs, liquor, and tobacco combined and nearly eight times as many stolen items as office supplies and equipment. In addition, 69% of national thefts classified in 1975 (FBI, 1976: Tables 1, 26) involve automobiles, their parts or accessories, and thefts from automobiles or thefts of bicycles. Yet radio and television sets plus electronic components and accessories totaled only 0.10% of the total truckload tonnage terminated in 1973 by intercity motor carriers, while passenger cars, motor vehicle parts and accessories, motorcycles, bicycles, and their parts, totaled only 5.5% of the 410 million truckload tons terminated (ICC, 1974). Clearly, portable and movable durables are reported stolen in great disproportion to their share of the value and weight of goods circulating in the United States.

Family Activities and Crime Rates

One would expect that persons living in single-adult households and those employed outside the home are less obligated to confine their time to family activities within households. From a routine activity perspective, these persons and their households should have higher rates of

predatory criminal victimization. We also expect that adolescents and young adults who are perhaps more likely to engage in peer group activities rather than family activities will have higher rates of criminal victimization. Finally, married persons should have lower rates than others. Tables 2 and 3 largely confirm these expectations (with the exception of personal larceny with contact). Examining these tables, we note that victimization rates appear to be related inversely to age and are lower for persons in "less active" statuses (e.g., keeping house, unable to work, retired) and persons in intact marriages. A notable exception is indicated in Table 2, where persons unable to work appear more likely to be victimized by rape, robbery and personal larceny with contact than are other "inactive persons." Unemployed persons also have unusually high rates of victimization. However, these rates are consistent with the routine activity approach offered here: the high rates of victimization suffered by the unemployed may reflect their residential proximity to high concentrations of potential offenders as well as their age and racial composition, while handicapped persons have high risk of personal victimization because they are less able to resist motivated offenders. Nonetheless, persons who keep house have noticeably lower rates of victimization than those who are employed, unemployed, in school or in the armed forces.

As Table 3 indicates, burglary and robbery victimization rates are about twice as high for persons living in single-adult households as for other persons in each age group examined. Other victimization data (USDJ, 1976: Table 21) indicate that, while household victimization rates tend to vary directly with household size, larger households have lower rates per person. For example, the total household victimization rates (including burglary, household larceny, and motor vehicle theft) per 1,000 households were 168 for single-person households and 326 for households containing six or more persons. Hence, six people distributed over six single-person households experience an average of 1,008 household victimizations, more than three times as many as

Table 2. Selected Status-Specific Personal Victimization Rates for the United States (per 100,000 Persons in Each Category)

Variables and Sources	Victim Category	Rape	Robbery	Assault	Personal Larceny with Contact	Personal Larceny without Contact
A. AGE (Source: Hindelang, et al., 1977: Table 310, 1974 rates)	12-15	147	1,267	3,848	311	16,355
	16-19	248	1,127	5,411	370	15,606
	20-24	209	1,072	4,829	337	14,295
	25-34	135	703	3,023	263	10,354
	35-49	21	547	1,515	256	7,667
	50-64	33	411	731	347	4,588
	65+	20	388	492	344	1,845
B. MAJOR ACTIVITY OF VICTIM (Source: Hindelang, et al., 1977: Table 313, 1974 rates)	(Male 16+)					
	Armed Forces	—	1,388	4,153	118	16,274
	Employed	—	807	3,285	252	10,318
	Unemployed	—	2,179	7,984	594	15,905
	Keep house	—	0	2,475	463	3,998
	In school	—	1,362	5,984	493	17,133
	Unable to work	—	1,520	2,556	623	3,648
	Retired	—	578	662	205	2,080
	(Female 16+)					
	Keep house	116	271	978	285	4,433
	Employed	156	529	1,576	355	9,419
	Unemployed	798	772	5,065	461	12,338
	In School	417	430	2,035	298	12,810
	Unable to work	287	842	741	326	1,003
	Retired	120	172	438	831	1,571
C. MARITAL STATUS (Source: USDJ: 1977, Table 5, 1973 rates)	(Male 12+)					
	Never Married	—	1,800	5,870	450	16,450
	Married	—	550	2,170	170	7,660
	Separated/Divorced	—	2,270	5,640	1,040	12,960
	Widowed	—	1,150	1,500	—	4,120
	(Female 12+)					
	Never Married	360	580	2,560	400	12,880
	Married	70	270	910	220	6,570
	Separated/Divorced	540	1,090	4,560	640	9,130
	Widowed	—	450	590	480	2,460

Line indicates too few offenses for accurate estimates of rate. However, rates in these cells are usually small.

one six-person household. Moreover, age of household head has a strong relationship to a household's victimization rate for these crimes. For households headed

by persons under 20, the motor vehicle theft rate is nine times as high, and the burglary and household larceny rates four times as high as those for households headed by persons 65 and over (USDJ, 1976: Table 9).

While the data presented in this section were not collected originally for the purpose of testing the routine activity approach, our efforts to rework them for these purposes have proven fruitful. The routine activity approach is consistent with the data examined and, in addition, helps to accommodate within a rather simple and coherent analytical framework certain findings which, though not necessarily new, might otherwise be attributed only "descriptive" significance. In the next section, we examine macrosocial

Table 3. Robbery-Burglary Victimization Rates by Ages and Number of Adults in Household, 1974 and 1976 General Social Survey

Age	Number of Adults in Household		Ratio
	One	Two or More	
18-35	0.200 (140)	0.095 (985)	2.11
36-55	0.161 (112)	0.079 (826)	2.04
56 and over	0.107 (262)	0.061 (640)	1.76
All Ages	0.144 (514)	0.081 (2451)	1.78

(Numbers in parentheses are the base for computing risk rates.)

Source: Calculated from 1974 and 1976 General Social Survey, National Opinion Research Center, University of Chicago.

trends as they relate to trends in crime rates.

CHANGING TRENDS IN ROUTINE ACTIVITY STRUCTURE AND PARALLEL TRENDS IN CRIME RATES

The main thesis presented here is that the dramatic increase in the reported crime rates in the U.S. since 1960 is linked to changes in the routine activity structure of American society and to a corresponding increase in target suitability and decrease in guardian presence. If such a thesis has validity, then we should be able to identify these social trends and show how they relate to predatory criminal victimization rates.

Trends in Human Activity Patterns

The decade 1960-1970 experienced noteworthy trends in the activities of the American population. For example, the percent of the population consisting of female college students increased 118% (USBC, 1975: Table 225). Married female labor force participant rates increased 31% (USBC, 1975: Table 563), while the percent of the population living as primary individuals increased by 34% (USBC, 1975: Table 51; see also Kobrin, 1976). We gain some further insight into changing routine activity patterns by comparing hourly data for 1960 and 1971 on households *unattended* by persons ages 14 or over when U.S. census interviewers first called (see Table 4). These data suggest that the proportion of households unattended at 8 A.M. increased by almost half between 1960 and 1971. One also finds increases in rates of out-of-town travel, which provides greater opportunity for both daytime and nighttime burglary of residences. Between 1960 and 1970, there was a 72% increase in state and national park visits per capita (USBC, 1975), an 144% increase in the percent of plant workers eligible for three weeks vacation (BLS, 1975: Table 116), and an 184% increase in overseas travellers per 100,000 population (USBC, 1975: Table 366). The National Travel Survey, conducted as part of the U.S. Census Bureau's Census of Transportation, confirms the general

Table 4. Proportion of Households Unattended by Anyone 14 Years Old or Over by Time of Day during First Visit by Census Bureau Interviewer, 1960 and 1971

Time of day	November, 1971		
	1960 Census	Current Pop. Survey	Percent Change
8:00- 8:59 a.m.	29%	43	+48.9%
9:00- 9:59 a.m.	29	44	+58
10:00-10:59 a.m.	31	42	+36
11:00-11:59 a.m.	32	41	+28
12:00-12:59 p.m.	32	41	+28
1:00- 1:59 p.m.	31	43	+39
2:00- 2:59 p.m.	33	43	+30
3:00- 3:59 p.m.	30	33	+10
4:00- 4:59 p.m.	28	30	+ 7
5:00- 5:59 p.m.	22	26	+18
6:00- 6:59 p.m.	22	25	+14
7:00- 7:50 p.m.	20	29	+45
8:00- 8:59 p.m.	24	22	- 8

Source: Calculated from USBC (1973b: Table A).

trends, tallying an 81% increase in the number of vacations taken by Americans from 1967 to 1972, a five-year period (USBC, 1973a: Introduction).

The dispersion of activities away from households appears to be a major recent social change. Although this decade also experienced an important 31% increase in the percent of the population ages 15-24, age structure change was only one of many social trends occurring during the period, especially trends in the circulation of people and property in American society.⁷

The importance of the changing activity structure is underscored by taking a brief look at demographic changes between the years 1970 and 1975, a period of continuing crime rate increments. Most of the recent changes in age structure relevant to crime rates already had occurred by 1970; indeed, the proportion of the population ages 15-24 increased by only 6% between 1970 and 1975, compared with a 15% increase during the five years 1965 to 1970. On the other hand, major changes in the structure of routine activities continued

⁷ While the more sophisticated treatments of the topic have varied somewhat in their findings, most recent studies attempting to link crime rate increases to the changing age structure of the American population have found that the latter account for a relatively limited proportion of the general crime trend (see, for example, Sagi and Wellford, 1968; Ferdinand, 1970; and Wellford, 1973).

during these years. For example, in only five years, the estimated proportion of the population consisting of husband-present, married women in the labor force households increased by 11%, while the estimated number of non-husband-wife households per 100,000 population increased from 9,150 to 11,420, a 25% increase (USBC, 1976: Tables 50, 276; USBC, 1970-1975). At the same time, the percent of population enrolled in higher education increased 16% between 1970 and 1975.

Related Property Trends and Their Relation to Human Activity Patterns

Many of the activity trends mentioned above normally involve significant investments in durable goods. For example, the dispersion of population across relatively more households (especially non-husband-wife households) enlarges the market for durable goods such as television sets and automobiles. Women participating in the labor force and both men and women enrolled in college provide a market for automobiles. Both work and travel often involve the purchase of major movable or portable durables and their use away from home.

Considerable data are available which indicate that sales of consumer goods changed dramatically between 1960 and 1970 (as did their size and weight), hence providing more suitable property available for theft. For example, during this decade, constant-dollar personal consumer expenditures in the United States for motor vehicles and parts increased by 71%, while constant-dollar expenditures for other durables increased by 105% (calculated from CEA, 1976: Table B-16). In addition, electronic household appliances and small houseware shipments increased from 56.2 to 119.7 million units (*Electrical Merchandising Week*, 1964; *Merchandising Week*, 1973). During the same decade, appliance imports increased in value by 681% (USBC, 1975: Table 1368).

This same period appears to have spawned a revolution in small durable product design which further feeds the opportunity for crime to occur. Relevant data from the 1960 and 1970 Sears catalogs

on the weight of many consumer durable goods were examined. Sears is the nation's largest retailer and its policy of purchasing and relabeling standard manufactured goods makes its catalogs a good source of data on widely merchandised consumer goods. The lightest television listed for sale in 1960 weighed 38 lbs., compared with 15 lbs. for 1970. Thus, the lightest televisions were 2½ times as heavy in 1960 as 1970. Similar trends are observed for dozens of other goods listed in the Sears catalog. Data from *Consumer Reports Buying Guide*, published in December of 1959 and 1969, show similar changes for radios, record players, slide projectors, tape recorders, televisions, toasters and many other goods. Hence, major declines in weight between 1960 and 1970 were quite significant for these and other goods, which suggests that the consumer goods market may be producing many more targets suitable for theft. In general, one finds rapid growth in property suitable for illegal removal and in household and individual exposure to attack during the years 1960-1975.

Related Trends in Business Establishments

Of course, as households and individuals increased their ownership of small durables, businesses also increased the value of the merchandise which they transport and sell as well as the money involved in these transactions. Yet the Census of Business conducted in 1958, 1963, 1967, and 1972 indicate that the number of wholesale, retail, service, and public warehouse establishments (including establishments owned by large organizations) was a nearly constant ratio of one for every 16 persons in the United States. Since more goods and money were distributed over a relatively fixed number of business establishments, the tempo of business activity per establishment apparently was increasing. At the same time, the percent of the population employed as sales clerks or salesmen in retail trade declined from 1.48% to 1.27%, between 1960 and 1970, a 14.7% decline (USBC, 1975: Table 589).

Though both business and personal

property increased, the changing pace of activities appears to have exposed the latter to greater relative risk of attack, whether at home or elsewhere, due to the dispersion of goods among many more households, while concentrating goods in business establishments. However, merchandise in retail establishments with heavy volume and few employees to guard it probably is exposed to major increments in risk of illegal removal than is most other business property.

Composition of Crime Trends

If these changes in the circulation of people and property are in fact related to crime trends, the *composition* of the latter should reflect this. We expect relatively greater increases in personal and household victimization as compared with most business victimizations, while shoplifting should increase more rapidly than other types of thefts from businesses. We expect personal offenses at the hands of strangers to manifest greater increases than such offenses at the hands of nonstrangers. Finally, residential burglary rates should increase more in daytime than nighttime.

The available time series on the composition of offenses confirm these expectations. For example, Table 5 shows that commercial burglaries declined from 60% to 36% of the total, while daytime residential burglaries increased from 16% to 33%. Unlike the other crimes against business, shoplifting increased its share. Though we lack trend data on the circumstances of other violent offenses, murder data confirm our expectations. Between 1963 and 1975, felon-type murders increased from 17% to 32% of the total. Compared with a 47% increase in the rate of relative killings in this period, we calculated a 294% increase in the murder rate at the hands of known or suspected felon types.

Thus the trends in the composition of recorded crime rates appear to be highly consistent with the activity structure trends noted earlier. In the next section we apply the routine activity approach in order to model crime rate trends and social change in the post-World War II United States.

Table 5. Offense Analysis Trends for Robbery, Burglary, Larceny and Murder; United States, 1960-1975

A. ROBBERIES ^a				
	1960	1965	1970	
Highway Robbery	52.6	57.0	59.8	
Residential Robbery	8.0	10.1	13.1	
Commercial Robbery	39.4	32.9	27.1	
Totals	100.0	100.0	100.0	
B. BURGLARIES				
	1960	1965	1970	1975
Residential	15.6	24.5	31.7	33.2
Residential Nighttime	24.4	25.2	25.8	30.5
Commercial	60.0	50.2	42.5	36.3
Totals	100.0	99.9	100.0	100.0
C. LARCENIES				
	1960	1965	1970	1975
Shoplifting	6.0	7.8	9.2	11.3
Other	94.0	92.2	90.8	88.7
Totals	100.0	100.0	100.0	100.0
D. MURDERS				
	1963	1965	1970	1975
Relative Killings	31.0	31.0	23.3	22.4
Romance, Arguments ^b	51.0	48.0	47.9	45.2
Felon Types ^c	17.0	21.0	28.8	32.4
Totals	100.0	100.0	100.0	100.0

Source: Offense Analysis from UCR, various years.

^a Excluding miscellaneous robberies. The 1975 distribution omitted due to apparent instability of post-1970 data.

^b Includes romantic triangles, lovers' quarrels and arguments.

^c Includes both known and suspected felon types.

THE RELATIONSHIP OF THE HOUSEHOLD ACTIVITY RATIO TO FIVE ANNUAL OFFICIAL INDEX CRIME RATES IN THE UNITED STATES, 1947-1974

In this section, we test the hypothesis that aggregate official crime rate trends in the United States vary directly over time with the dispersion of activities away from family and household. The limitations of annual time series data do not allow construction of direct measures of changes in hourly activity patterns, or quantities, qualities and movements of exact stocks of household durable goods, but the Current Population Survey does provide related time series on labor force and household structure. From these data, we calculate annually (beginning in 1947) a household activity ratio by adding the number of married, husband-present female labor force participants (source: BLS, 1975: Table 5) to the number of non-husband-wife households (source: USBC, 1947-1976), dividing this sum by

the total number of households in the U.S. (source: USBC, 1947–1976). This calculation provides an estimate of the proportion of American households in year t expected to be most highly exposed to risk of personal and property victimization due to the dispersion of their activities away from family and household and/or their likelihood of owning extra sets of durables subject to high risk of attack. Hence, the household activity ratio should vary directly with official index crime rates.

Our empirical goal in this section is to test this relationship, with controls for those variables which other researchers have linked empirically to crime rate trends in the United States. Since various researchers have found such trends to increase with the proportion of the population in teen and young adult years (Fox, 1976; Land and Felson, 1976; Sagi and Wellford, 1968; Wellford, 1973), we include the population ages 15–24 per 100,000 resident population in year t as our first control variable (source: USBC, various years). Others (e.g., Brenner, 1976a; 1976b) have found unemployment rates to vary directly with official crime rates over time, although this relationship elsewhere has been shown to be empirically questionable (see Mansfield et al., 1974: 463; Cohen and Felson, 1979). Thus, as our second, control variable, we take the standard annual unemployment rate (per 100 persons ages 16 and over) as a measure of the business cycle (source: BLS, 1975).

Four of the five crime rates that we utilize here (forcible rape, aggravated assault, robbery and burglary) are taken from FBI estimates of offenses per 100,000 U.S. population (as revised and reported in OMB, 1973). We exclude larceny-theft due to a major definitional change in 1960 and auto theft due to excessive multicollinearity in the analysis.⁸ For our homicide indicator we employ the

homicide mortality rate taken from the vital statistics data collected by the Bureau of the Census (various years). The latter rate has the advantage of being collected separately from the standard crime reporting system and is thought to contain less measurement error (see Bowers and Pierce, 1975). Hence, this analysis of official index crime rates includes three violent offenses (homicide, forcible rape, and aggravated assault), one property offense (burglary), and one offense which involves both the removal of property and the threat of violence (robbery). The analysis thus includes one offense thought to have relatively low reporting reliability (forcible rape), one thought to have relatively high reliability (homicide), and three others having relatively intermediate levels of reporting quality (Ennis, 1967).

Since official crime rates in year t are likely to reflect some accumulation of criminal opportunity and inclinations over several years, one should not expect these rates to respond solely to the level of the independent variables for year t . A useful model of cumulative social change in circumstances such as this is the difference equation, which can be estimated in two forms (see Goldberg, 1958). One form takes the first difference ($y_t - y_{t-1}$) as the dependent variable—in this case, the change in the official crime rate per 100,000 population between year $t-1$ and year t . Alternatively, one can estimate the difference equation in autoregressive form by taking the official crime rate in year t as a function of the exogenous predictors plus the official crime rate in year $t-1$ on the right-hand side of the equation. (See Land, 1978, for a review of these and other methods and for references to related literature.) Both forms are estimable with ordinary least squares methods, which we employ for the years 1947 through 1974. The N is 28 years for all but the homicide rate, for which publication lags reduce our N to 26.

Even if a positive relationship between the household activity ratio and the official crime rates is observed, with controls for age and unemployment, we are open to the charge that this may be a spurious consequence of autocorrelation of disturbances, that is, the possibility that residu-

⁸ The auto theft rate lagged one year correlated quite strongly with the predictor variables. This multicollinearity impaired our difference equation analysis, although we again found consistently positive coefficients for the household activity ratio. We were able to remove autocorrelation by logging all variables and including the unemployment as a control, but do not report these equations.

als are systematically related for nearby time points. While spurious relationships are a risk one also takes in cross-sectional regression analysis, time-series analysts have devised a variety of methods for monitoring and adjusting for spuriousness due to this autocorrelation, including the Durbin and Watson (1951) statistic, Durbin's *h* statistic (Durbin, 1970), the Griliches (1967) criterion, as well as Cochran and Orcutt (1949) corrections. We employ (but do not report in detail) these methods to check for the likelihood that the observed relationship is spurious. (See Land, 1978, for a review of such tests and the related literature on their applicability and robustness; see Theil, 1971, for a methodological review.)

Findings

Our time-series analysis for the years 1947–1974 consistently revealed positive and statistically significant relationships between the household activity ratio and each official crime rate change. Whichever official crime rate is employed, this finding occurs—whether we take the first difference for each crime rate as exogenous or estimate the equation in autoregressive form (with the lagged dependent variable on the right-hand side of the equation); whether we include or exclude the unemployment variable; whether we take the current scales of variables or convert them to natural log values; whether we employ the age structure variable as described or alter the ages examined (e.g., 14–24, 15–19, etc.). In short, the relationship is positive and significant in each case.

Before calculating the difference equations, we regressed each crime rate in year *t* on the three independent variables for year *t*. This ordinary structural equation also produced consistent positive and significant coefficients for the routine activity coefficient, the total variance explained ranges from 84% to 97%. However, the Durbin-Watson statistics for these equations indicated high risk of autocorrelation, which is hardly surprising since they ignore lagged effects. Reestimated equations taking first differences as endogenous reduced the risk of autocorre-

lation significantly (and also reduced variance explained to between 35% and 77%). These equations also consistently produce significant positive coefficients for the household activity variable. When unemployment is included in these equations, its coefficients are all negative and near zero.

The top panel of Table 6 presents regression estimates of first differences for five official crime rates, with the age structure and household activity variables in year *t* as the only predictors. Again, the household activity coefficients are consistently positive, with *t* ratios always significant with a one-tailed test. Except for the aggravated assault equation, the household activity variable has a *t* ratio and standardized coefficient greater than that of the age structure variable. The standardized coefficients for the household activity variable range from .42 to .72, while the age structure coefficients are consistently positive. In general, the household activity variable is a stronger predictor of official crime rate trends than the age structure.

The equations in the top panel of Table 6 generally have lower variance explained but also lower risk of autocorrelation of disturbances than those reported above. For all five equations, the Durbin-Watson statistic allows acceptance of the null hypothesis that autocorrelation is absent at the 1% level. A 5% level (which *increases* the likelihood of proving the statistic non-zero) allows us neither to accept nor reject the null hypothesis that autocorrelation is absent in the homicide and robbery equations.

Though autocorrelation has not been proven to exist in these five equations, its risk may be sufficient in two to motivate further efforts at equation estimation (see bottom panel of Table 6). We estimated the equations in autoregressive form to see if the risk abates. Since the Durbin-Watson statistic was not designed for evaluating autocorrelation in these equations, we calculated Durbin's *h*, a statistic specifically designed for equations estimated with a lagged dependent variable (Durbin, 1970), and recently found to be robust for small samples (Maddala and Rao, 1973). This statistic allows ac-

Table 6. Regression Equations for First Differences in Five-Index Crime Rates and Sensitivity Analyses, the United States, 1947-1974

FIRST DIFFERENCE FORM	(1) Nonnegligent Homicide	(2) Forcible Rape	(3) Aggravated Assault	(4) Robbery	(5) Burglary
Constant	-2.3632	-4.8591	-32.0507	-43.8838	-221.2303
t ratio	.3502	5.3679	7.6567	3.4497	3.7229
Proportion 15-24 (t)					
Standardized	.1667	.1425	.4941	.2320	.1952
Unstandardized	3.2190	6.4685	132.1072	116.7742	486.0806
t ratio	1.0695	.7505	3.3147	.9642	.8591
Household Activity Ratio (t)					
Standardized	.7162	.6713	.4377	.4242	.5106
Unstandardized	4.0676	8.9743	34.4658	62.8834	374.4746
t ratio	4.5959	3.5356	2.9364	1.7629	2.2474
Multiple R ² Adjusted	.6791	.5850	.7442	.3335	.4058
Degrees of Freedom	23	25	25	25	25
Durbin-Watson Value	2.5455	2.3388	2.3446	1.4548	1.7641
1% test	Accept	Accept	Accept	Accept	Accept
5% test	Uncertain	Accept	Accept	Uncertain	Accept
AUTOREGRESSIVE FORM					
Multiple R ² Adjusted	.9873	.9888	.9961	.9768	.9859
Durbin's h	-1.3751	-.7487	.9709	1.5490	1.1445
-1% test	Accept	Accept	Accept	Accept	Accept
-5% test	Accept	Accept	Accept	Accept	Accept
Griliches Criterion					
Cochrane-Orcutt Correction,					
Effect upon Household Activity	Minimal	Minimal	Minimal	Minimal	Minimal
Unemployment Rate as Control,					
Effect Upon Household Activity	Minimal	Minimal	Minimal	Minimal	Minimal

ceptance of the null hypothesis (at both 1% and 5% levels) that autocorrelation is absent for all five equations. Application of the Griliches (1967) criterion further allows acceptance of each equation as manifesting distributing lags rather than serial correlation. We also employed the Cochrane-Orcutt (1949) iterative procedure to calculate a correction estimate for any autocorrelation present. The resulting correction for the household activity coefficient proves minimal in all five cases. Finally, we calculated each of the above equations for natural log values of the relevant variables, finding again that the household activity coefficient was consistently positive and statistically significant and the risk of autocorrelation reduced still further.

The positive and significant relationship between the household activity variable and the official crime rates is robust and appears to hold for both macro- and microlevel data; it explains five crime rate trends, as well as the changing composition of official crime rates reported in Table 5. These results suggest that routine activities may indeed provide the opportunity for many illegal activities to occur.

DISCUSSION

In our judgment many conventional theories of crime (the adequacy of which usually is evaluated by cross-sectional data, or no data at all) have difficulty accounting for the annual changes in crime rate trends in the post-World War II United States. These theories may prove useful in explaining crime trends during other periods, within specific communities, or in particular subgroups of the population. Longitudinal aggregate data for the United States, however, indicate that the trends for many of the presumed causal variables in these theoretical structures are in a direction opposite to those hypothesized to be the causes of crime. For example, during the decade 1960-1970, the percent of the population below the low-income level declined 44% and the unemployment rate declined 186%. Central city population as a share of the whole population declined slightly, while the

percent of foreign stock declined 0.1%, etc. (see USBC, 1975: 654, 19, 39).

On the other hand, the convergence in time and space of three elements (motivated offenders, suitable targets, and the absence of capable guardians) appears useful for understanding crime rate trends. The lack of any of these elements is sufficient to prevent the occurrence of a successful direct-contact predatory crime. The convergence in time and space of suitable targets and the absence of capable guardians can lead to large increases in crime rates without any increase or change in the structural conditions that motivate individuals to engage in crime. Presumably, had the social indicators of the variables hypothesized to be the causes of crime in conventional theories changed in the direction of favoring increased crime in the post-World War II United States, the increases in crime rates likely would have been even more staggering than those which were observed. In any event, it is our belief that criminologists have underemphasized the importance of the convergence of suitable targets and the absence of capable guardians in explaining recent increases in the crime rate. Furthermore, the effects of the convergence in time and space of these elements may be multiplicative rather than additive. That is, their convergence by a fixed percentage may produce increases in crime rates far greater than that fixed percentage, demonstrating how some relatively modest social trends can contribute to some relatively large changes in crime rate trends. The fact that logged variables improved our equations (moving Durbin-Watson values closer to "ideal" levels) lends support to the argument that such an interaction occurs.

Those few investigations of cross-sectional data which include household indicators produce results similar to ours. For example, Roncek (1975) and Choldin and Roncek (1976) report on block-level data for San Diego, Cleveland and Peoria and indicate that the proportion of a block's households which are primary individual households consistently offers the best or nearly the best predictor of a block's crime rate. This relationship persisted after they controlled for numerous

social variables, including race, density, age and poverty. Thus the association between household structure and risk of criminal victimization has been observed in individual-level and block-level cross-sectional data, as well as aggregate national time-series data.

Without denying the importance of factors motivating offenders to engage in crime, we have focused specific attention upon violations themselves and the prerequisites for their occurrence. However, the routine activity approach might in the future be applied to the analysis of offenders and their inclinations as well. For example, the structure of primary group activity may affect the likelihood that cultural transmission or social control of criminal inclinations will occur, while the structure of the community may affect the tempo of criminogenic peer group activity. We also may expect that circumstances favorable for carrying out violations contribute to criminal inclinations in the long run by rewarding these inclinations.

We further suggest that the routine activity framework may prove useful in explaining why the criminal justice system, the community and the family have appeared so ineffective in exerting social control since 1960. Substantial increases in the opportunity to carry out predatory violations may have undermined society's mechanisms for social control. For example, it may be difficult for institutions seeking to increase the certainty, celerity and severity of punishment to compete with structural changes resulting in vast increases in the certainty, celerity and value of rewards to be gained from illegal predatory acts.

It is ironic that the very factors which increase the opportunity to enjoy the benefits of life also may increase the opportunity for predatory violations. For example, automobiles provide freedom of movement to offenders as well as average citizens and offer vulnerable targets for theft. College enrollment, female labor force participation, urbanization, suburbanization, vacations and new electronic durables provide various opportunities to escape the confines of the household while they increase the risk of predatory

victimization. Indeed, the opportunity for predatory crime appears to be enmeshed in the opportunity structure for legitimate activities to such an extent that it might be very difficult to root out substantial amounts of crime without modifying much of our way of life. Rather than assuming that predatory crime is simply an indicator of social breakdown, one might take it as a byproduct of freedom and prosperity as they manifest themselves in the routine activities of everyday life.

REFERENCES

- Amir, Menachem
1971 *Patterns of Forcible Rape*. Chicago: University of Chicago Press.
- Boggs, Sarah
1965 "Urban crime patterns." *American Sociological Review* 30:899-905.
- Bonger, W. A.
1916 *Criminality and Economic Conditions*. Boston: Little, Brown.
- Bowers, W. J. and Glen L. Pierce
1975 "The illusion of deterrence of Isaac Ehrlich's research on capital punishment." *Yale Law Journal* 85:187-208.
- Brenner, Harvey
1976a *Estimating the Social Costs of National Economic Policy: Implications for Mental and Physical Health and Criminal Aggression*. Paper no. 5, Joint Economic Committee, Congress of the United States. Washington, D.C.: U.S. Government Printing Office.
1976b *Effects of the National Economy on Criminal Aggression II. Final Report to National Institute of Mental Health*. Contract #282-76-0355FS.
- Bureau of Labor Statistics (BLS)
1975 *Handbook of Labor Statistics 1975—Reference Edition*. Washington, D.C.: U.S. Government Printing Office.
- Cameron, Mary Owen
1964 *The Booster and the Snitch*. New York: Free Press.
- Chambliss, William J.
1972 *Boxman: A Professional Thief's Journey*. New York: Harper and Row.
- Choldin, Harvey M. and Dennis W. Roncek
1976 "Density, population potential and pathology: a block-level analysis." *Public Data Use* 4:19-30.
- Cloward, Richard and Lloyd Ohlin
1960 *Delinquency and Opportunity*. New York: Free Press.
- Cochrane, D., and G. H. Orcutt
1949 "Application of least squares regression to relationships containing autocorrelated error terms." *Journal of the American Statistical Association* 44:32-61.

- Cohen, Lawrence E. and Marcus Felson
1979 "On estimating the social costs of national economic policy: a critical examination of the Brenner study." *Social Indicators Research*. In press.
- Colquhoun, Patrick
1800 *Treatise on the Police of the Metropolis*. London: Baldwin.
- Consumer Reports Buying Guide
1959 *Consumer Reports* (December). Mt. Vernon: Consumers Union.
1969 *Consumer Reports* (December). Mt. Vernon: Consumers Union.
1975 *Consumer Reports* (December). Mt. Vernon: Consumers Union.
- Council of Economic Advisors (CEA)
1976 *The Economic Report of the President*. Washington, D.C.: U.S. Government Printing Office.
- Durbin, J.
1970 "Testing for serial correlation when least squares regressors are lagged dependent variables." *Econometrica* 38:410-21.
- Durbin, J., and G. S. Watson
1951 "Testing for serial correlation in least squares regression, II." *Biometrika* 38:159-78.
- Durkheim, Emile
1951 *Suicide: A Study in Sociology*. New York: Free Press.
1966 *The Division of Labor in Society*. New York: Free Press.
- Electrical Merchandising Week
1964 *Statistical and Marketing Report* (January). New York: Billboard Publications.
- Ennis, Philip H.
1967 "Criminal victimization in the U.S.: a report of a national survey, field surveys II." *The President's Commission on Law Enforcement and the Administration of Justice*. Washington, D.C.: U.S. Government Printing Office.
- Federal Bureau of Investigation (FBI)
1975 *Crime in the U.S.: Uniform Crime Report*. Washington, D.C.: U.S. Government Printing Office.
1976 *Crime in the U.S.: Uniform Crime Report*. Washington, D.C.: U.S. Government Printing Office.
- Ferdinand, Theodore N.
1970 "Demographic shifts and criminality." *British Journal of Criminology* 10:169-75.
- Fleisher, Belton M.
1966 *The Economics of Delinquency*. Chicago: Quadrangle.
- Fox, James A.
1976 *An Econometric Analysis of Crime Data*. Ph.D. dissertation, Department of Sociology, University of Pennsylvania. Ann Arbor: University Microfilms.
- Glaser, Daniel
1971 *Social Deviance*. Chicago: Markham.
- Goldberg, Samuel
1958 *Introduction to Difference Equations*. New York: Wiley.
- Gould, Leroy
1969 "The changing structure of property crime in an affluent society." *Social Forces* 48:50-9.
- Griliches, Z.
1967 "Distributed lags: a survey." *Econometrica* 35:16-49.
- Gussey, A. M.
1933 "Essai sur la statistique morale de la France." *Westminster Review* 18:357.
- Havley, Amos
1950 *Human Ecology: A Theory of Community Structure*. New York: Ronald.
- Heary, A. F., and J. F. Short
1954 *Suicide and Homicide*. New York: Free Press.
- Hirsdelang, Michael J.
1976 *Criminal Victimization in Eight American Cities: A Descriptive Analysis of Common Theft and Assault*. Cambridge: Ballinger.
- Hirsdelang, Michael J., Christopher S. Dunn, Paul Sutton and Alison L. Aumick
1976 *Sourcebook of Criminal Justice Statistics—1975*. U.S. Dept. of Justice, Law Enforcement Assistance Administration. Washington, D.C.: U.S. Government Printing Office.
1977 *Sourcebook of Criminal Justice Statistics—1976*. U.S. Dept. of Justice, Law Enforcement Assistance Administration. Washington, D.C.: U.S. Government Printing Office.
- Interstate Commerce Commission (ICC)
1974 *Annual Report: Freight Commodity Statistics of Class I Motor Carriers of Property Operative in Intercity Service*. Washington, D.C.: U.S. Government Printing Office.
- Jackson, Bruce
1969 *A Thief's Primer*. New York: Macmillan.
- Jeffery, C. R.
1971 *Crime Prevention Through Environmental Design*. Beverly Hills: Sage.
- Kleckars, Carl B.
1974 *The Professional Fence*. New York: Free Press.
- Kofrin, Frances E.
1976 "The primary individual and the family: changes in living arrangements in the U.S. since 1940." *Journal of Marriage and the Family* 38:233-9.
- Lard, Kenneth C.
1978 "Modelling macro social change." Paper presented at annual meeting of the American Sociological Association, San Francisco.
- Lard, Kenneth C. and Marcus Felson
1976 "A general framework for building dynamic macro social indicator models: including an analysis of changes in crime rates and police expenditures." *American Journal of Sociology* 82:565-604.
- Lettemann, Peter
1973 *Crime As Work*. Englewood Cliffs: Prentice-Hall.
- Lysad, Mary
1974 *An Annotated Bibliography: Violence at Home*. DHEW Publication No. (ADM 75-

- 136). Washington, D.C.: U.S. Government Printing Office.
- Maddala, G. S., and A. S. Rao
1973 "Tests for serial correlation in regression models with lagged dependent variables and serially correlated errors." *Econometrica* 41:761-74.
- Mansfield, Roger, Leroy Gould, and J. Zvi Namer-wirth
1974 "A socioeconomic model for the prediction of societal rates of property theft." *Social Forces* 52:462-72.
- Martin, John Bower
1952 *My Life in Crime*. New York: Harper.
- Maurer, David W.
1964 *Whiz Mob*. New Haven: College and University Press.
- Merchandising Week
1973 Statistical and Marketing Report (February). New York: Billboard Publications.
1976 Statistical and Marketing Report (March). New York: Billboard Publications.
- National Commission on the Causes and Prevention of Violence
1969 *Crimes of Violence*. Vol. 13. Washington, D.C.: U.S. Government Printing Office.
- Nettler, Gwynn
1974 *Explaining Crime*. New York: McGraw-Hill.
- Newman, Oscar
1973 *Defensible Space: Crime Prevention Through Urban Design*. New York: Macmillan.
- Office of Management and the Budget (OMB)
1973 *Social Indicators 1973*. Washington, D.C.: U.S. Government Printing Office.
- Pope, Carl E.
1977a *Crime-Specific Analysis: The Characteristics of Burglary Incidents*. U.S. Dept. of Justice, Law Enforcement Assistance Administration. Analytic Report 10. Washington, D.C.: U.S. Government Printing Office.
1977b *Crime-Specific Analysis: An Empirical Examination of Burglary Offense and Offender Characteristics*. U.S. Dept. of Justice, Law Enforcement Assistance Administration. Analytic Report 12. Washington, D.C.: U.S. Government Printing Office.
- Quètelet, Adolphe
1842 *A Treatise on Man*. Edinburgh: Chambers.
- Reiss, Albert J.
1976 "Settling the frontiers of a pioneer in American criminology: Henry McKay." Pp. 64-88 in James F. Short, Jr. (ed.), *Delinquency, Crime, and Society*. Chicago: University of Chicago Press.
- Repetto, Thomas J.
1974 *Residential Crime*. Cambridge: Ballinger.
- Roncek, Dennis
1975 *Crime Rates and Residential Densities in Two Large Cities*. Ph.D. dissertation, Department of Sociology, University of Illinois, Urbana.
- Sagi, Phillip C. and Charles E. Wellford
1968 "Age composition and patterns of change in criminal statistics." *Journal of Criminal Law, Criminology and Police Science* 59:29-36.
- Scarr, Harry A.
1972 *Patterns of Burglary*. U.S. Dept. of Justice, Law Enforcement Assistance Administration. Washington, D.C.: U.S. Government Printing Office.
- Sears Catalogue
1960 Chicago: Sears.
1970 Chicago: Sears.
- Shaw, Clifford R., Henry D. McKay, Frederick Zorbaugh and Leonard S. Cottrell
1929 *Delinquency Areas*. Chicago: University of Chicago Press.
- Short, James F., and Fred Strodtbeck
1965 *Group Process and Gang Delinquency*. Chicago: University of Chicago Press.
- Skogan, Wesley G.
1976 "The victims of crime: some material findings." Pp. 131-48 in Anthony L. Guenther (ed.), *Criminal Behavior in Social Systems*. Chicago: Rand McNally.
- Sutherland, Edwin H.
1937 *The Professional Thief*. Chicago: University of Chicago Press.
- Szalai, Alexander (ed.)
1972 *The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries*. The Hague: Mouton.
- Theil, Henri
1971 *Principles of Econometrics*. New York: Wiley.
- Tobias, J. J.
1967 *Crime and Industrial Society in the Nineteenth Century*. New York: Schocken Books.
- U.S. Bureau of the Census (USBC)
1973a *Census of Transportation, 1972*. U.S. Summary. Washington, D.C.: U.S. Government Printing Office.
1973b *Who's Home When*. Working Paper 37. Washington, D.C.: U.S. Government Printing Office.
1975-
1976 *Statistical Abstract of the U.S.* Washington, D.C.: U.S. Government Printing Office.
1947-
1976 *Current Population Studies*. P-25 Ser. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Justice (USDJ)
1974a *Preliminary Report of the Impact Cities, Crime Survey Results*. Washington, D.C.: Law Enforcement Assistance Administration (NCJISS).
1974b *Crime in the Nation's Five Largest Cities: Advance Report*. Washington, D.C.: Law Enforcement Assistance Administration (NCJISS).
1974c *Crimes and Victims: A Report on the Dayton-San Jose Pilot Survey of Victimization*. Washington, D.C.: Law Enforcement Assistance Administration.
1976 *Criminal Victimization in the U.S., 1973*. Washington, D.C.: Law Enforcement Assistance Administration (NCJISS).
1977 *Criminal Victimization in the U.S.: A*

- Comparison of 1974 and 1975 Findings. Washington, D.C.: Law Enforcement Assistance Administration (NCJISS).
- Washnis, George J.
1976 Citizen Involvement in Crime Prevention. Lexington: Heath.
- Wellford, Charles F.
1973 "Age composition and the increase in recorded crime." *Criminology* 11:61-70.
- Wilks, Judith A.
1967 "Ecological correlates of crime and delinquency." Pp. 138-56 in President's Commission on Law Enforcement and the Administration of Justice Task Force Report: Crime and Its Impact—An Assessment. Appendix A. Washington, D.C.: U.S. Government Printing Office.
- Williamson, Henry
1958 *Hustler!* New York: Doubleday.
- Wolfgang, Marvin E.
1958 *Patterns of Criminal Homicide*. Philadelphia: University of Pennsylvania Press.

INTERGENERATIONAL OCCUPATIONAL MOBILITY AND FERTILITY: A REASSESSMENT*

FRANK D. BEAN AND GRAY SWICEGOOD

University of Texas, Austin

American Sociological Review 1979, Vol. 44 (August):608-619

This paper examines the relationship between intergenerational occupational mobility and family size; it focuses on the partition of cumulative fertility into two components—intended and unintended births—that may respond differently to social and economic sources of influence. Four theoretical perspectives are drawn upon to set forth alternative predictions of the relationship between unintended and intended births for upwardly and downwardly mobile couples. The results of regression analyses of 1970 National Fertility Survey data lend support to Easterlin's *relative economic status* hypothesis, which advances the expectation of a positive relationship between direction of mobility and fertility, although this pattern is observed only for unintended births. The implications of this finding for certain theories of fertility, as well as for the inconclusive nature of previous research into the mobility-fertility relationship, are discussed.

Social mobility provides one of the major points of articulation between social stratification and demography. Not only is social mobility an integral feature of all systems of social stratification (e.g., Lopreato et al., 1976; Tyree and Hodge, 1978), it also has noticeable demographic correlates, both for societies and individuals (Blau and Duncan, 1967:361; Featherman and Hauser, 1978). One of the most important would seem to be fertility, as evidenced by numerous empirical studies conducted during the past 25 years (e.g., Berent, 1952; Goldberg, 1959; Tien, 1961;

Westoff, 1953; Westoff et al., 1961; Westoff et al., 1963; Boyd, 1973). The cumulative research evidence, however, has been inconclusive, if not totally negative. Scarcely any substantial basis has been found for the conclusion that social mobility accounts for additional variation in fertility above and beyond that which is associated with measures of origin and destination position themselves (e.g., Duncan, 1966; Boyd, 1973).

For the most part, explanations of these negative results, as distinct from theoretical interpretations that are consonant with the idea that knowledge of origin and destination positions suffices to explain the fertility of the mobile (e.g., Blau, 1956:29), have taken either of two tracks. On the one hand, they have suggested that the methodological basis for assessing relationships between mobility and fertility is biased against the discovery of such relationships (e.g., Hope, 1971; 1975; Lopreato et al., 1976). On the other hand, they

*Direct all communications to: Frank D. Bean; Department of Sociology; University of Texas; Austin, TX 78712.

The data upon which this paper is based were collected pursuant to contract #PH-43-65 1048 with the National Institute of Health, Public Health Service, Department of Health, Education and Welfare. We would like to express our appreciation to Carolyn Boyd, Norval Glenn, Joseph Lopreato, Alberto Palloni, and two anonymous reviewers for helpful comments on an earlier draft of the paper.

have noted that the correlates of mobility may not be very pronounced in developed societies because the distinctions connected with social position in such societies are more diffuse and less sharply defined, thus mitigating the effects of movement across class or status boundaries (e.g., Germani, 1966; Treiman, 1970). While both of these may account for the failure to observe a relationship between mobility and fertility, another possibility is that different kinds of childbearing may respond variously to the experience of mobility. Although some students of the mobility-fertility relationship have examined both cumulative fertility and the effectiveness of fertility planning as separate (though clearly related) responses to mobility (e.g., Kantner and Kiser, 1954; Westoff et al., 1961), no studies to our knowledge have inquired into the relationship between mobility and different fertility components, thus allowing for the possibility that these might have varying motivational, social, and economic origins.

This lacuna no doubt stems from the absence until recently of attempts to partition cumulative fertility in ways that might potentially reflect such sources of influence. Cumulative fertility has both quantitative and temporal aspects. As Ryder and Westoff (1972; Westoff and Ryder, 1977; Ryder, 1978) note, completed family size may include both planned and unplanned births, the latter consisting of timing failures as well as births that the parents never intended to have. Hence, by distinguishing unplanned births according to whether or not the parents ever intended to have them, we may define an unintended birth as not only one that was unplanned, but also one that the parents never intended to have. An intended birth is one that the parents either planned at the time it was conceived or one that they would have had at some future point anyway.

The difference between intended and unintended births is crucial for present purposes because it distinguishes the desire to have children from the tendency actually to have them. In the words of Ryder and Westoff (1972:471), "The distinction . . . permits the separation of two

sources of (fertility) differentials: the demand for children and the effectiveness of fertility control." Because these conceivably may respond differently to various sources of influence, it is important to examine theories about the relationship between mobility and fertility in terms of whether the explanatory factors they emphasize might be expected to bear different relationships to these different kinds of fertility outcomes. To the extent that this is the case, estimates of the mobility-fertility relationship based on analyses that do not treat them separately may be subject to an unknown amount of distortion.

ALTERNATIVE THEORETICAL PERSPECTIVES

One of the most frequently cited theoretical perspectives invoked to predict a relationship between mobility and fertility underscores the socially disintegrative aspects of the mobility experience (e.g., Sorokin, 1927; Blau and Duncan, 1967). In this view, social mobility is seen as a process that disrupts established social ties and relationships and thrusts people into new and potentially alienating environments. Such social disequilibrium is thought either to inhibit severely the reproduction process because of accompanying strain and disorientation or to lead to high fertility as mobile couples compensate for previously lost social ties with unusually large families (Blau and Duncan, 1967:415-7; Hoffman and Wyatt, 1960).

These views, both of which may be subsumed under the disintegrative framework and which may be termed *stress and disorientation* and *social isolation*, respectively, generate predictions that run in opposite directions, not only between views but also within views by kind of fertility outcome. Although both emphasize the disruptive features of mobility, the former envisions the mobile individual as having experienced sufficient stress and strain to interfere with normal social experiences and decrease the desire for children, whereas the latter sees the mobile individual as socially isolated and disaffected and thus interested in increasing childbearing in compensation.

These views also generate opposite predictions when applied to unintended childbearing. Because strain and disorientation seem to contribute to greater contraceptive failure (Bean and Aiken, 1976), the disorientation perspective offers a basis for predicting a positive relationship between mobility and unintended fertility. By contrast, the kind of forces underlying the social isolation perspective might be expected to decrease unintended fertility because they would operate to reduce the tendency to designate births retrospectively as unintended.¹

A second general perspective, which may be termed *status enhancement*, finds expression in the work of Westoff and his associates (1953; Westoff et al., 1961). The argument here is that mobility is accompanied by reduced fertility because diminished childbearing permits gains in time, money and energy that can be devoted to attaining and/or maintaining higher social positions (in the case of the upwardly mobile) or to efforts to recapture previous positions, or perhaps attempts to avoid their further decline (in the case of the downwardly mobile). The reduced fertility seen to accompany mobility may be either intended, unintended, or both. Just as the mobile may desire fewer children in order to enhance their socioeconomic position, so may they also take greater care to avoid unintended births.

The work of Easterlin (1969; 1975; 1978) provides still another theoretical framework, as well as a different prediction. His approach, which may be termed *relative economic status*, suggests that high relative economic status will cause an increase in fertility because it decreases age at marriage and increases the pace of early marital fertility (MacDonald and Rindfuss, 1978). By relative economic status he means the ratio of permanent income (i.e., lifetime income) to consumption preferences formed in the parental household. Thus, if permanent income is high relative to tastes for consumer goods established

while growing up, fertility is expected to be high. On the assumption that the upwardly and downwardly mobile have respectively higher and lower relative economic status than the nonmobile, we would expect the upwardly mobile to show comparatively higher and the downwardly mobile comparatively lower fertility. This prediction may be stated with respect to either intended or unintended fertility (or both), depending upon whether the operative mechanism is one of raising the demand for births or one of lowering the demand for fertility regulation (or both) (Bean et al., 1978).

A final possibility concerns selectivity. Higher or lower fertility may be selective of couples who are respectively upwardly or downwardly mobile (Fisher, 1929; Blau and Duncan, 1967:368). Because children require the expenditure of resources (both tangible and intangible), couples with unusually high fertility may find it all the more difficult to maintain social positions inherited from the previous generation, while couples with very low fertility may find it all the easier to achieve social gains. Again, these predications might be expected to apply equally well to intended or unintended fertility, since either type of fertility could be selective of the particular mobility status in question.

In sum, several theoretical frameworks offer alternative bases for predicting the relationship between intergenerational occupational mobility and fertility. These are listed in Table 1, together with an indication of whether the given perspective would predict higher or lower intended and unintended fertility for upwardly and downwardly mobile couples. The primary purpose of this paper is to see which of these various theoretical perspectives provides the best prediction of the relationship between mobility and fertility. Examination of empirical relationships between intergenerational occupational mobility and intended and unintended fertility provides not only a test of alternative theories, but also a potential illustration of why the results of previous research based on undifferentiated fertility measures have yielded inconclusive evidence in support of hypotheses relating mobility and fertility.

¹ Neal and Groat (1975) observe that social isolation bears a positive relationship to unplanned fertility. Their analysis, however, does not distinguish intended and unintended births.

Table 1. Predicted Direction of Relationship between Mobility and Fertility for Alternative Theoretical Perspectives

Theoretical Perspective	Intended Births		Unintended Births	
	Up Mobility	Down Mobility	Up Mobility	Down Mobility
I. Social Disintegration				
a. Stress and Disorientation (Sorokin; Blau and Duncan)	-	-	+	+
b. Social Isolation (Blau and Duncan; Hoffman and Wyatt)	+	+	-	-
II. Status Enhancement (Westoff et al.)	-	-	-	-
III. Relative Economic Status (Easterlin)	+	-	+	-
IV. Selectivity (Fisher)	-	+	-	+

DATA AND METHODOLOGY

The different hypotheses about the relationship between mobility and fertility are assessed using data from the 1970 National Fertility Survey (NFS). This survey was a national (areal) probability sample of ever-married women born in the United States since July 1, 1925. A total of 6,752 women were interviewed, including a double quota of blacks in an effort to generate meaningful estimates of various fertility measures for this population subgroup. The principal deficiency of the sample is that it is somewhat underrepresentative of women residing in the central cities of large SMSAs (Westoff and Ryder, 1977). While this may affect the amount of occupational mobility in the sample, particularly among blacks, we do not feel that it would bias our estimate of mobility-fertility relationships for reasons to be noted below.

It is necessary to place certain restrictions on the sample for purposes of the present investigation. First, we restrict the sample to women who were far enough along in their childbearing to have been exposed to the risk of having an unintended birth. Thus, all women intending to have more children at the time of the interview are excluded. Second, since we define intergenerational mobility in terms of the current occupation of the husband and the occupation of the husband's father, we restrict the sample to women who were married at the time of the interview. Although we cannot say with certainty, we would think this would reduce

bias in the results owing to underrepresentation of central city women, since such women are less likely to be currently married (Carter and Glick, 1976:246). Third, in order to avoid the ambiguities involved in studying the fertility of women in higher order marriages, only once-married women are included; this should also reduce distortion in the findings owing to sample bias. Altogether, these delimitations yield a study sample of 2,265 respondents.

Occupational status is measured in terms of Duncan SEI scores (Duncan, 1961). While Siegel (1971) prestige scores are also available for the occupational data, these would be less useful for an analysis of occupational mobility than status scores. Because the latter are based on education and income, they provide less "error prone" estimates of the socio-economic attributes of occupations² than prestige scores (Featherman and Hauser, 1976:405). Moreover, in evaluating the Easterlin hypothesis as an interpretation of any relationship between mobility and fertility, scores derived from the educational and income characteristics of occupations would seem to provide a better proxy of permanent income than would scores based on prestige.²

² The SEI is an imperfect indicator of permanent income since it is an average of an occupation's educational level as well as its income. Some white-collar occupations with relatively modest earnings will have their SEI scores pulled up by their relatively high educational levels, while some blue-collar occupations with similar earnings but lower educa-

We assess intergenerational occupational mobility by comparing the occupational status of the respondents' husbands' fathers with the occupational status of the husbands themselves at the time of the interview. We do not use the husband's occupational status at the time of marriage on the assumption that this would not furnish as reliable an indication of eventual location in the occupational structure as a job later in the life cycle (Featherman and Hauser, 1978:88). More important, the hypotheses about the relationship between mobility and fertility do not always require that mobility be the independent variable (as in the case of the selectivity hypothesis). For all of these reasons, a measure of occupation later in the occupational life cycle seems preferable. In order to take into account differences among husbands in occupational attainment owing to variation in length of career, however, we introduce age as a control variable in all of the analyses.

Occupational mobility occurs because of intercohort changes in occupational structure as well as because of individual movements. These different kinds of mobility have been referred to as *structural* and *circulation* mobility, respectively, and efforts to separate the two in aggregate analyses of mobility tables have been numerous (Rogoff, 1953; Blau and Duncan, 1967; Tyree, 1973). This distinction needs to be kept in mind when we define mobility operationally. The initial step we take in this regard is to subtract the husbands' fathers' SEI score from the SEI score for husbands' current job. If this difference exceeds 40 SEI points, we classify the couple as upwardly mobile; if it is less than minus 20 points, we classify the couple as downwardly mobile.

This might be viewed as a somewhat extreme definition of mobility. However, it increases the likelihood that the respondents will have incurred enough status change to be of some consequence. Featherman and Hauser (1973:252-3) report average intergenerational differences

in occupational status for U.S. men in 1973 of approximately 12 points on the Duncan scale (about one-half of a standard deviation); these figures are nearly identical to the differences observed for the men in the present sample (see Table 2). The criterion for upward mobility of a difference of 40 status points, then, is equivalent to requiring that husbands in the sample be about one and two-thirds standard deviations above the SEI score of their fathers in order to be categorized as upwardly mobile. In the case of the measured mobility of any given individual, of course, we cannot speak of a portion of this owing to structural and circulation mobility respectively, because the latter are aggregate rather than individual properties. Nonetheless, it is reasonable to assume that the individual consequences of mobility may be mitigated when structural mobility is high. Moreover, the alternative theories being examined here, particularly the *stress and disorientation* and *social isolation* hypotheses, may be argued to be most adequately tested under conditions maximizing the likelihood of the individual consequences of mobility. Hence, given that a significant amount of structural mobility is characteristic of the U.S. occupational structure (Featherman and Hauser, 1978:102), the definition does not seem unreasonably stringent.

In the case of downward mobility, we have established a criterion that involves less movement along the SEI scale. This is in consideration of the average intergenerational shift upward of more than ten SEI points in occupational status. That is, given the overall preponderance of upward over downward moves, it is likely that less movement is required to be of some consequence in the case of downward as opposed to upward mobility. The adoption of these two definitions of mobility, then, result in almost 16% of the couples in the study sample being classified as upwardly mobile and more than 9% as downwardly mobile.³

tional levels will have lower SEI scores. Nonetheless, the SEI undoubtedly reflects permanent income, and it probably does so to an even greater extent than current income since the latter does not reflect adequately the lifetime earnings of younger men.

³ It should also be noted, however, that 48.6% of the couples *could not* be downwardly mobile by this definition because their fathers had SEI scores of 20 points or lower: by the same token, 17.4% *could not* be upwardly mobile. Hence, if we only consider couples who could possibly be mobile in either direc-

In the analyses which follow, we assess the relationship between upward and downward mobility and both intended and unintended fertility; we control statistically the effects of both origin and destination occupational status. We also adjust for a number of other variables that might be thought to affect the relationships. These include: wife's education, wife's age at marriage, husband's age, farm background, current farm residence, religion, race and, in the case of models involving unintended fertility, the length of exposure to the risk of an unintended birth. This latter variable is defined as the number of months since a woman had her last intended birth. Our measures of the fertility variables follow the procedures outlined by Ryder and Westoff (1972; Westoff and Ryder, 1977). In order to assess the mobility-fertility relationship, we regress the various measures of fertility on the status, control, and mobility variables; we examine first the regressions for the total number of births (intended plus unintended) and then the regressions for the number of intended and unintended births separately.

The various theoretical perspectives on the mobility-fertility relationship include hypotheses of relationships between mobility and intended or unintended fertility that run in opposite directions. They also include hypotheses of relationships that run in the same direction for upward and downward mobility, as well as predictions that run in opposite directions depending on the direction of mobility. In general, two different patterns are suggested. In one, couples who are socially mobile, irrespective of the direction of the mobility, are expected to show a level of fertility that is different from that of nonmobile couples. In the other, upwardly mobile couples are expected to manifest a fertility level that is different from that of downwardly mobile couples (irrespective of whether this differs from the level of nonmobile couples). Actually, both of these patterns could happen at the same time. In order to allow for this, the upwardly mobile, downwardly mobile and non-

mobile categories were coded in such a way as to generate a set of orthogonal contrasts reflecting these possibilities (Kerlinger and Pedhazur, 1973:145-50). That is, on the one hand, the two mobility categories were contrasted with the nonmobile category and, on the other hand, the upwardly mobile category was contrasted with the downwardly mobile category.

When appropriately coded to reflect category differences in sample size, these contrasts are statistically independent, meaning that the F-ratios associated with them in a regression analysis reflect their relative (and independent) contributions to explained variation in fertility above and beyond that associated with the effects of origin and destination status (and control variables).⁴ Thus, we estimate a regression model of the following form:

$$\hat{F} = a + b_1O + b_2D + b_3X + cZ_1 + dZ_2,$$

where F = a fertility measure (either total births, intended births, or unintended births), O = origin status (in SEI units), D = destination status (in SEI units), and X = a control variable (see Table 2 for scale units), Z_1 = a contrast-coded variable constructed to assess the mean fertility difference between the mobile and the nonmobile, and Z_2 = a contrast-coded variable constructed to assess the mean fertility difference between the upwardly and downwardly mobile. Actually, all of the control variables were entered into the model simultaneously, although we do not show this in the above equation for simplicity of presentation.

The contrast variables were coded such that a positive value of c indicates higher fertility for the mobile and a positive value

⁴ The coding procedure used to produce the orthogonal contrasts is:

Mobility	Z_1	Z_2	Proportion of Cases
Up	$-n_2$ (-16.92)	n_3 (2.14)	.158
Stable	$n_1 + n_3$ (5.73)	0	.747
Down	$-n_2$ (-16.92)	$-n_1$ (-3.59)	.094

where n_1 = frequency of upwardly mobile divided by 100,

n_2 = frequency of stable divided by 100,

n_3 = frequency of downwardly mobile divided by 100.

tion, by the above definitions, then the percentages of couples who are mobile among those who could possibly be mobile is even higher (19.2 and 18.4%, respectively, for upward and downward mobility).

Table 2. Correlations, Means, and Standard Deviations for Variables Used in Regression Analyses (N=2,265)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	\bar{X}	S
1. Origin Status															28.31	20.47
2. Destination Status	.326														39.33	24.07
3. Exposure to Risk of Unwanted Birth	-.072	-.052													102.41	71.68
4. Wife's Education ^a	.258	.445	-.110												2.89	1.01
5. Wife's Age at Marriage ^b	.136	.208	-.086	.275											19.91	4.06
6. Husband's Age ^c	-.005	.027	.628	-.037	.105										38.13	7.81
7. NonFarm Background ^d	.122	.084	-.101	.141	.050	-.039									0.73	0.45
8. Farm Residence ^e	-.132	-.242	.040	-.079	-.081	.068	.118								0.09	0.29
9. Catholic ^f	.017	.040	-.078	-.016	.117	.011	.138	-.038							0.25	0.44
10. Black ^g	-.147	-.205	.042	-.155	-.034	.019	-.080	-.036	-.038						0.12	0.32
11. Intended Births	-.071	-.133	-.178	-.183	-.159	.112	-.044	.068	.143	.133					2.62	1.53
12. Unintended Births	-.079	-.127	.252	.167	-.078	.117	-.001	.015	.015	.226	.036				.44	1.05
13. Total Births	-.101	-.179	-.004	-.241	-.172	.155	-.036	.064	.125	.234	.832	.586			3.06	1.88
14. Z ₁	-.088	-.291	-.013	-.123	-.091	-.057	-.039	.102	-.023	.053	.037	.033	.048		0.0	9.85
15. Z ₂	-.483	.488	.014	.155	.048	.023	-.026	-.066	.030	-.053	-.044	-.009	-.041	0.0	0.0	1.39

^a Coded as follows: (1) grades 1-8; (2) 1-3 years high school; (3) 4 years high school; (4) 1-3 years college; (5) 4 or more years college.

^b In years.

^c In years.

^d A dummy variable indicating farm background (growing up on a farm) for either husband or wife.

^e A dummy variable indicating current farm residence.

^f A dummy variable for Catholics and Mormons.

^g A dummy variable indicating race.

of d indicates higher fertility for the upwardly mobile. Translating the predictions of the various theoretical perspectives into expectations for values of c and d , we observe that the stress and disorientation perspective would predict a negative value for c in the case of intended fertility, a positive value in the case of unintended fertility, and a zero value for d . The social isolation perspective would predict a positive value for c in the case of intended fertility, a negative value in the case of unintended fertility, and a zero value for d . The status enhancement approach would predict a negative value of c for both intended and unintended fertility and a zero value for d . The relative socioeconomic status perspective would predict a positive value for d for both intended and unintended fertility and a zero value for c , whereas the selectivity hypothesis would predict a negative value for d and a zero value for c for both fertility measures.

It should be emphasized that since Z_1 and Z_2 are a priori orthogonal contrasts and thus independent, the statistical significance of either (or both) may be taken as evidence in support of some pattern of a mobility-fertility relationship, although not necessarily one of those predicted by the aforementioned theories (Hope, 1971). Merely as a statistical yardstick this is a conservative criterion. The sizes of the mobile categories are relatively small, meaning that the contributions they can make to increasing the explained fertility sums of squares are somewhat constrained from the outset (see Jackson and Curtis, 1972). Moreover, Z_1 and Z_2 , though orthogonal to one another, are estimated on the basis of a regression model that partials out overlapping variance between the status dimensions and the interaction effects they represent. While we could adopt alternative approaches to the assessment of mobility effects (e.g., Hope, 1975), we choose the more conservative approach in view of our greater interest in comparing the different theoretical perspectives than in comparing alternative statistical approaches.

RESULTS

Table 2 presents the intercorrelations, means and standard deviations for the

variables used in the regression analyses. On the average, the women in the sample had over 2.6 intended births per woman and slightly more than 0.4 unintended births per woman. Altogether, the average number of births to women in the sample was slightly more than 3.0 per woman. The results of the regressions of the fertility measures on the control, status, and mobility variables are presented in Table 3. In the A columns are the results of regression models allowing for the additive effects of the control variables, together with those of origin and destination occupational status only, whereas in the B columns are the results of regression models allowing not only for the additive effects of the control and origin and destination variables, but also for the nonadditive effects of upward and downward mobility. The latter are presented in terms of the coefficients associated with the two orthogonal contrasts, Z_1 and Z_2 , which taken together yield an effect on fertility equivalent to that which would be obtained using dummy variables for upward and downward mobility. At the bottom of the table are F-tests for the significance of the increment to R^2 associated with the models in the B columns over those associated with the column A models.

A brief comment on the relationships between the nonmobility and the fertility variables is in order, although these are not of central interest to our concerns here. All of the relationships involving control variables are in the expected direction across fertility measures, and all are statistically significant for at least one of the fertility variables. Occupational status at origin bears no consistently discernible relationship to the fertility measures, whereas destination status exhibits a uniformly negative relationship that is statistically significant for total and unintended births though not for intended births.

Turning to the mobility results, we find that in the case of the regressions involving the total number of births, the addition of the mobility contrasts to the regression model in column A does not significantly improve the fit of the data to the model. This result is in accordance with the findings of the vast bulk of previous research, but it does not tell us if mobility bears a

Table 3. Regression of Fertility Variables on Control Variables and Mobility Contrasts (Unstandardized Coefficients)

Independent Variable	Total Births		Intended		Unintended	
	A	B	A	B	A	B
Origin Status	-.000	-.004	.001	.001	.000	.004 ^b
Destination Status	-.004 ^b	-.007 ^a	-.002	-.002	-.001	-.005 ^b
Exposure to	-.006 ^a	-.006 ^a	*	*	.004 ^a	.004 ^a
Wife's Education	-.257 ^a	-.260 ^a	-.138 ^a	-.139 ^a	-.096 ^a	-.099 ^a
Wife's Age at Marriage	-.085 ^a	-.085 ^a	-.057 ^a	-.057 ^a	-.005	-.005
Husband's Age	.006 ^a	.006 ^a	.002 ^a	.002 ^a	-.001 ^b	-.001 ^b
Nonfarm Background	-.100	-.099	-.134 ^c	-.134 ^c	.113 ^b	.114 ^b
Farm Residence	.206	.202	.271 ^b	.271 ^b	-.010	-.014
Catholic	.736 ^a	.732 ^a	.673 ^a	.673 ^a	.171 ^a	.167 ^a
Black	1.329 ^a	1.332 ^a	.662 ^a	.662 ^a	.678 ^a	.680 ^a
Z ₁	*	-.015	*	.000	*	-.013
Z ₂	*	.084 ^c	*	.002	*	.080 ^a
Constant	3.16	3.19	3.17	3.17	.56	.59
R ²	.2005	.2016	.1086	.1087	.1327	.1359
F	56.53	47.38	30.52 ^a	24.95 ^a	34.51 ^a	29.53 ^a
F (increment to R ² of adding mobility contrasts)		1.495		.11		.4.13 ^a

^a p < .01.^b p < .05.^c p < .10.

* Deleted from the regression.

different relationship to the intended and unintended components of fertility. For this, we turn to an examination of the remainder of Table 3. Although the addition of the mobility contrasts does not significantly improve the explanatory power of the regression model in the case of intended births, their inclusion clearly does so in the case of unintended births. Moreover, it is the Z₂ contrast that accounts for nearly all of the mobility effect.

The value of the coefficient associated with the contrast is positive, indicating that the upwardly mobile have higher average unintended childbearing than the downwardly mobile. In fact, extraneous of the influence of the control and status variables, the upwardly mobile reveal a level of unintended childbearing (not shown in the table) that is nearly 0.2 of a child above that of the nonmobile couples, and the downwardly mobile a level nearly 0.3 of a child below the nonmobile couples. The average difference in level of unintended fertility between the upwardly and downwardly mobile couples is nearly 0.5 of a child on the average.⁵

⁵ The significant coefficient for Z₂ may be substantially translated into a predicted net average difference in unintended births for the upwardly mobile minus the nonmobile of .18 by substituting the score on Z₂ above into the regression equation. The net average difference for the nonmobile minus the

Recalling the alternative predictions of the various theoretical perspectives, we find that the results are most consistent with the relative economic status position of Easterlin. That is, the upwardly mobile exhibit for *unintended* births a positive value of *d* and an insignificant value of *c*, indicating higher fertility for the upwardly mobile as compared with the downwardly mobile. Hence, the results lend support to the notion that higher relative economic status is associated with a rise in fertility and lower relative economic status with a decline. The appearance of this pattern *only* for unintended childbearing is consistent with the idea that the different fertility components have different social and economic origins; it is also indicative of a possible source of ambiguity in previous tests of mobility-fertility relationships. But it is a finding not predicted by any of the theoretical perspectives. The question why mobility bears a relationship to unintended but not intended fertility is addressed below.

DISCUSSION

In general, these results lend support to the relative economic status hypothesis

downwardly mobile of -.29 is similarly derived:

$$\hat{F}_u = a + b_1X + \dots + .08(2.14);$$

$$\hat{F}_d = a + b_1X + \dots + .08(-3.59).$$

that intergenerational occupational mobility varies positively with fertility. Interestingly, however, the operative mechanism does not appear to be one associated with the demand for births. Rather, it would seem to be one associated with the relaxation of the perceived need for fertility regulation. That is to say, improvements in intergenerational occupational status would appear less to make people want more children than they do to make people less diligent in the practice of effective contraception. Those experiencing intergenerational declines in status, rather than wanting fewer children, have fewer unintended births, suggesting a greater effectiveness in the practice of contraceptive regulation.

The finding that mobility is related to unintended rather than intended fertility accords well with recent evidence for the United States that secular trends in cohort fertility over the past 25 years are mostly the result of changes in patterns of unintended childbearing. For example, Ryder (1978:455) notes:

During the phase of rising fertility, popularly known as the baby boom, it is approximately correct to say that there was no change in the mean number of intended births. There was, however, a deterioration in the effectiveness with which unintended fertility was prevented, and a consequent rise in unintended births.

If we assume that unintended fertility is more susceptible than intended fertility to influence by certain social and economic conditions, as Ryder's results would seem to indicate, then perhaps studies of many kinds of social correlates of fertility behavior should concentrate on unintended childbearing. The finding of the present study that intended childbearing is relatively impervious to the additive effects of occupational status as well as the nonadditive effects of occupational mobility is certainly consistent with this position. Why this should be the case is less clear, although it does suggest that the social factors affecting intended fertility may be deeply rooted in the social structure and thus relatively enduring in their effects.

The results of this research also have implications for economic theories of fertility (e.g., Schultz, 1974), of which Easterlin's relative economic status hypoth-

esis is one variant. Economic theories have been especially useful in drawing attention to the fact that having children involves costs as well as benefits (Espenshade, 1973; Bean, 1975). They have also tended to focus on factors that, to use the economist's idiom, affect the demand for births, often under the assumption of perfect control of supply (e.g., Becker, 1960). The findings of this research, together with those of others (Ryder, 1978; Bean et al., 1978), suggest that the supply of births may be at least as subject to social and economic influence as the demand for births. Translated into policy terms, this reinforces the idea that efforts to influence societal fertility patterns are likely to be more successful if they attempt to deal with fertility regulation than if they try to change desired fertility (Bumpass and Westoff, 1970).

Finally, it is important to note that previous studies of the mobility-fertility relationship that have not been able to separate the different components of completed fertility may have been biased at the outset against finding "mobility effects." Future studies of the relationship should consider that these components may relate differently to the experience of mobility. At the same time, further research is needed to see if the pattern of results observed here may be generalized to other groups of women. To a considerable degree, the results of this study are based on older women (those not intending any more children), many of whom probably had their intended children (as well as the experience of being exposed to the risk of an unintended birth) before the full impact of the "contraceptive revolution" made its presence felt in the U.S. (Westoff and Ryder, 1977). Whether younger cohorts of women will respond similarly to the experience of social mobility remains a question for further investigation.

REFERENCES

- Bean, Frank D.
1975 "Review essay: economics of the family, marriage, children and human capital." *Demography* 12:557-61.
- Bean, Frank D. and Linda Aiken
1976 "Intermarriage and unwanted fertility in the United States." *Journal of Marriage and the Family* 38:61-72.

- Bean, Frank D., Susan H. Cochrane, Howard Savage and Charles H. Wood
 1978 "Income and the supply and demand for children: an analysis of wanted versus unwanted fertility." Pp. 321-30 in Julian Simon (ed.), *Research in Population Economics*, Vol. 1. Greenwich: JAI Press.
- Becker, Gary S.
 1960 "An economic analysis of fertility." Pp. 209-31 in Universities-National Bureau, Committee of Economic Research (ed.), *Demographic and Economic Change in Developed Countries*. Princeton: Princeton University Press.
- Berent, Jerzy
 1952 "Fertility and social mobility." *Population Studies* 5:244-60.
- Blau, Peter M.
 1956 "Social mobility and interpersonal relations." *American Sociological Review* 21:290-5.
- Blau, Peter M. and Otis Dudley Duncan
 1967 *The American Occupational Structure*. New York: Wiley.
- Boyd, Monica
 1973 "Occupational mobility and fertility in metropolitan Latin America." *Demography* 10:1-17.
- Bumpass, L. and C. F. Westoff
 1970 "The perfect contraceptive population: extent and implications of unwanted fertility in the U.S." *Science* 169:1177-82.
- Carter, H. and P. C. Glick
 1976 *Marriage and Divorce*. Cambridge, Ma.: Harvard University Press.
- Duncan, Otis Dudley
 1951 "A socioeconomic index for all occupations." Pp. 109-38 in A. J. Reiss, Jr. (ed.), *Occupations and Social Status*. New York: Free Press.
- 1956 "Methodological issues in the analysis of social mobility." Pp. 51-97 in Neil J. Smelser and Seymour Martin Lipset (eds.), *Social Structure and Mobility in Economic Development*. Chicago: Aldine.
- Easterlin, Richard A.
 1969 "Towards a socioeconomic theory of fertility: a survey of recent research on economic factors in American fertility." Pp. 127-56 in S. J. Behrman, Leslie Corsa Jr., and Ronald Freedman (eds.), *Fertility and Family Planning: A World View*. Ann Arbor: University of Michigan Press.
- 1975 "An economic framework for fertility analysis." *Studies in Family Planning* 6:54-63.
- 1978 "What will 1984 be like? Socioeconomic implications of recent twists in the age structure." *Demography* 15:397-432.
- Espenshade, T. J.
 1973 "The cost of children in urban United States." Berkeley: University of California Population Monograph No. 14.
- Fisher, R. A.
 1929 *The Genetic Theory of Natural Selection*. 2nd rev. ed. New York: Dover.
- Featherman, David L. and Robert M. Hauser
 1976 "Prestige or socioeconomic scales in the study of occupational achievement?" *Sociological Methods and Research* 4:403-22.
- 1978 *Opportunity and Change*. New York: Academic Press.
- Germani, G.
 1966 "Social and political consequences of mobility." Pp. 364-94 in Neil J. Smelser and Seymour Martin Lipset (eds.), *Social Structure and Mobility in Economic Development*. Chicago: Aldine.
- Goldberg, David
 1959 "The fertility of two-generation urbanites." *Population Studies* 12:214-22.
- Hoffman, L. W., and F. Wyatt
 1960 Social change and motivations for having larger families: some theoretical considerations." *Merrill-Palmer Quarterly* 6:234-44.
- Hope, Keith
 1971 "Social mobility and fertility." *American Sociological Review* 26:1019-32.
- 1975 "Models of status inconsistency and social mobility effects." *American Sociological Review* 40:322-43.
- Jackson, Elton F. and Richard F. Curtis
 1972 "Effects of vertical mobility and status inconsistency: a body of negative evidence." *American Sociological Review* 37:701-13.
- Kantner, J. F. and C. V. Kiser
 1954 "The interrelation of fertility, fertility planning, and intergenerational social mobility." *Milbank Memorial Fund Quarterly* 29:69-103.
- Kerlinger, Fred N. and Elazar J. Pedhazur
 1973 *Multiple Regression in Behavioral Research*. New York: Holt, Rinehart, and Winston.
- Lopreato, Joseph, Frank D. Bean, and Sally Cook
 Lopreato
 1976 "Occupational mobility and political behavior: some unresolved issues." *Journal of Political and Military Sociology* 4:1-15.
- MacDonald, Maurice M. and Ronald R. Rindfuss
 1978 "Relative economic status and fertility: evidence from a cross section." Pp. 291-307 in Julian Simon (ed.), *Research in Population Economics*, Vol. 1. Greenwich: JAI Press.
- Neal, A. G. and H. T. Groat
 1975 "Alienation predictors of differential fertility: a longitudinal study." *American Journal of Sociology* 80:1220-6.
- Rogoff, Natalie
 1953 *Recent Trends in Occupational Mobility*. Glencoe: Free Press.
- Ryder, Norman B.
 1978 "A model of fertility by planning status." *Demography* 15:433-58.
- Ryder, Norman and C. Westoff
 1972 "Wanted and unwanted fertility in the United States: 1965 and 1970." Pp. 467-87 in C. Westoff and R. Parke (eds.), *Demographic and Social Aspects of Population Growth*, Vol. 1. U.S. Commission Report on Population Growth and the American Future. Washington, D.C.: U.S. Government Printing Office.

- Schultz, T. W. (ed.)
1974 *Economics of the Family: Marriage, Children and Human Capital*. Chicago: University of Chicago Press.
- Siegel, P. M.
1971 *Prestige in the American Occupational Structure*. Ph.D. dissertation, Department of Sociology, University of Chicago.
- Sorokin, Pitirim
1927 *Social Mobility*. New York: Harper.
- Tien, H. Yuan
1961 "The social mobility/fertility hypothesis reconsidered: an empirical study." *American Sociological Review* 26:247-57.
- Treiman, P. J.
1970 "Industrialization and social stratification." Pp. 207-34 in E. Laumann (ed.), *Social Stratification: Research and Theory for the 1970s*. Indianapolis: Bobbs-Merrill.
- Tyree, Andrea
1973 "Mobility ratios and association in mobility tables." *Population Studies* 27:577-88.
- Tyree, Andrea and Robert W. Hodge
1978 "Editorial foreword: five empirical landmarks." *Social Forces* 56:761-9.
- Westoff, Charles F.
1953 "The changing focus of differential fertility research: the social mobility hypothesis." *Milbank Memorial Fund Quarterly* 31:24-38.
- Westoff, Charles F., Robert G. Potter, Jr., Phillip C. Sagi, and Elliot G. Mishler
1961 *Family Growth in Metropolitan America*. Princeton: Princeton University Press.
- Westoff, C. F., Robert G. Potter, and Phillip C. Sagi
1963 *The Third Child: A Study in the Prediction of Fertility*. Princeton: Princeton University Press.
- Westoff, C. F. and N. B. Ryder
1977 *The Contraceptive Revolution*. Princeton: Princeton University Press.

ETHNIC POLITICAL MOBILIZATION: THE WELSH CASE*

CHARLES C. RAGIN

Indiana University

American Sociological Review 1979, Vol. 44 (August):619-635

In this paper we present an empirical test of three perspectives on ethnic political mobilization. These are: the developmental perspective, which treats ethnicity as a persistent primordial sentiment; the reactive ethnicity perspective, according to which ethnic mobilization may result from a cultural division of labor; and the ethnic competition perspective, in which ethnic mobilization is seen as an outgrowth of the increased competition between groups over roles and resources. In the Welsh case, available historical evidence lends some support to each of these perspectives. To adjudicate between them, we analyze historical census and election data on Welsh counties. This analysis supports the ethnic competition perspective, though some support is found for the developmental perspective.

INTRODUCTION: THE RESURGENCE OF ETHNICITY

Marxists and non-Marxists alike view ethnic political mobilization as a potentially disintegrative force in the modern polity. On one hand, Nairn (1977:5), a Marxist, argues that the movement toward Celtic secession in Britain may eclipse the class struggle as the major threat to the integrity of the British political system. On the other hand, "developmentalists" (Ragin, 1977), such as Lip-

set and Rokkan (1967:1-64) and Alford (1963:309-41), also view the threat to political integration posed by ethnic mobilization as acute. In the developmental perspective ethnic mobilization contradicts the expected predominance of functional cleavages in the modern polity. If ethnic mobilization in Britain does entail a negation of the functional bases of political competition, then the growth of the Celtic nationalist movements may portend the eventual break-up of Britain. For it is unlikely that the "British" polity can withstand widespread popular support in the Celtic periphery for autonomy or outright secession.

*Direct all communications to: Charles C. Ragin; Department of Sociology; Ballantine Hall; Indiana University; Bloomington, IN 47401.

This resurgence of ethnicity is not confined to the British polity. Ethnic mobilization has become increasingly important in all polities since World War II (Said and Simmons, 1976:10). Indeed, the most common cause of state-level violence in the last three decades has not been external wars but internal ethnic conflict (Said and Simmons, 1976:16). The Celtic experience in Britain is paralleled by that of the Québécois in Canada, the Flemish in Belgium, and, to a lesser extent, the Basque in Spain. While most of these conflicts have been fueled by nationalism, purely ethnic conflicts have increased independently of the growth of ethnic nationalisms.

This increased importance of ethnic affinity is anomalous in the light of classical sociological reasoning. According to this logic, ethnicity is a "primordial sentiment" (Geertz, 1963) which should wither away in societies that undergo significant structural differentiation. Thus, ethnicity is viewed as persistent, if not aberrant, in the modern setting (cf. Parsons, 1975:53-83). This traditional view of ethnicity has been challenged recently by the proponents of two competing perspectives: the reactive ethnicity perspective (Gellner, 1969; Hechter, 1975) and the ethnic competition perspective (Deutsch, 1953; Van den Berghe, 1967; Barth, 1969; Nielsen, 1977; 1978a; 1978b; Hannan, 1978).

In the next section of this paper we outline the basic tenets of these perspectives. We show that each supports a different set of predictions concerning the social structural conditions that favor ethnic political mobilization.

THREE PERSPECTIVES ON ETHNIC MOBILIZATION

The Developmental Perspective

The reasoning behind this view of ethnicity is presented most succinctly by Lipset and Rokkan (1967:1-64). The relevance of their arguments to ethnic mobilization is apparent when combined with a general diffusionist perspective on the process of nation building (see Hechter, 1975:22-30).

Briefly, Lipset and Rokkan argue that different types of political cleavages pre-

dominate during different phases of the development of the modern polity. The different types of cleavages conform to the dimensions of Parsons's AGIL scheme in a developmental typology. In this scheme cleavages that are geographically or culturally based are superseded by functional cleavages (Lipset and Rokkan, 1967:25-6) which reflect the "interests" (Weber, 1947:122-3) of actors and groups of actors defined according to their social structural positions. This predominance of functional cleavages in the modern polity, according to Lipset and Rokkan (1967:19) was brought on by the "Industrial revolution [which] . . . in the longer run tended to cut across the value communities within the nation and to force the enfranchised citizenry to choose sides in terms of their economic interests." After the extension of universal manhood suffrage, the growing predominance of functional interests in the political arena was manifested in the uniform establishment of mass, working-class political parties in European countries (Lipset and Rokkan, 1967:21). (See also Allardt and Littunen, 1964.)

For this transition to functionally-based political cleavages to become a reality on a national scale, it is necessary for the process of structural differentiation to engulf or at least reach the various "value communities" contained within the boundaries of the nation state. This is where the diffusionist perspective complements the developmental. Hechter (1975:22-30) outlines the former as follows: In societies characterized by a more advanced, modern core and a less advanced, traditional periphery, the economic integration of the periphery with the core will reduce its cultural and social organizational distinctiveness. This homogenization of core and periphery will progress as a function of the intensity of interregional interaction: the more intense these interactions, the more quickly the periphery comes to resemble the core. Thus, the cultural traditionalisms which may serve as a basis for ethnic mobilization will survive only to the extent that the peripheral area remains outside the sphere of the national economy. If the decline of distinctive cultural traditions in the periphery accompanies

social structural differentiation and precedes the extension of the suffrage, the peripheral areas should follow the lead of core areas when the transition to mass, class-based politics is made. This should result in a nationwide predominance of functionally-based political cleavages. (See also Stokes, 1968:182–202, on the nationalization of electoral forces and Butler and Stokes, 1969:247–74.)

The Reactive Ethnicity Perspective

In contrast with the developmental perspective which argues that the cultural bases of ethnic affinity persist only in the absence of social structural differentiation, the reactive ethnicity perspective argues that structural differentiation may actually enhance the salience of ethnic distinctions. Proponents of this perspective are critical of developmentalists for assuming that the universalistic allocation of roles and resources is somehow a necessary concomitant of structural differentiation. In the reactive ethnicity perspective a particularistic allocation of roles and resources may *accompany* structural differentiation. The most desirable rewards are reserved for members of the core cultural group while members of the peripheral cultural group are assigned to inferior positions and receive inferior rewards. This "cultural division of labor" (Hechter, 1975) may occur at any level of structural differentiation.

The two main proponents of this view are Gellner (1969:147–78) and Hechter (1975:30–43). Though there are important differences between these two which should not be overlooked, their predictions for our purposes converge.

Gellner defines as his problem the conditions that enhance the relevance of cultural affinity. He argues that, in general, these conditions are associated with the uneven spread of development, particularly industrialization, over the surface of the earth. This uneven spread, according to Gellner, creates more and less advanced collectivities. Often these more and less advanced collectivities reside within the territorial boundaries of multicultural political entities, and sharp cultural differences may coincide with these

broadly defined developmental differences. If cultural and developmental differences do coincide, as is often the case, the two will tend to reinforce one another, especially in the allocation of scarce roles, rewards and resources. Gellner (1969:168) argues:

... when ... new entrants in the industrial world aren't markedly distinguishable from the older, they cannot hardly be excluded. ... This is where culture, pigmentation, etc., become important: they provide means for exclusion for the benefit of the privileged, and a means of identification, etc., for the underprivileged.

For this reason, ethnic political mobilization should be seen as the product of the exclusionary practices that accompany the uneven spread of industrialization.

Hechter is in substantial agreement with Gellner; the two diverge primarily in emphasis. Hechter's deviations from Gellner mostly reflect his application of the theory to Celtic nationalism in Britain.

One important modification of Gellner's argument by Hechter is his treatment of cultural distinctiveness. In Gellner's framework, cultural distinctiveness must be sharp; otherwise, those members of the less advanced group who experience exclusion will simply forego their distinctive cultural practices in favor of assimilation. In Hechter's framework, however, relatively subtle cultural markers (e.g., accent; see Hechter, 1975:43) may serve as a basis for exclusion. A related modification is that exclusionary practices in Hechter's scheme may result in only a partial coincidence of economic and cultural subordination. This partial coincidence seems probable in a situation where markers are subtle, which presumably is the case in Celtic Britain. Finally, Hechter de-emphasizes the temporal association of ethnic mobilization with industrialization. In Gellner's argument, industrialization intensifies ethnic sentiment if assimilation does not soon follow. Hechter (1975:298–310), however, argues that the potential for ethnic mobilization may remain dormant for decades following industrialization, to be sparked only by specific political and economic factors.

Hechter buttresses Gellner's arguments with classical Marxist arguments and an

internal colonialism perspective. In Hechter's formulation a cultural division of labor is most likely when a peripheral area is developed as an internal colony. The nature of the development of the peripheral, internal colony is determined by the needs of the core developer. In the Celtic peripheral areas of Britain the specialized dependent mode of development has been industrial (Hechter, 1975; Ragin, 1977), but the industries that have been developed constitute mere appendages of the core, English economy. These dependent industries include mining and other extractive industries as well as metallurgical and other heavy manufacturing industries.¹ This pattern of industrial, internal colonial development, according to Hechter, has led to the creation of a Celtic industrial working class dominated by English or anglicized middle and upper classes.

The Marxist slant of Hechter's reactive ethnicity perspective is evident in his discussion of the structural conditions that generate and maintain ethnic affinity and of the circumstances which may spark ethnic mobilization. Generally, the structural conditions described by Hechter (1975:42) as conducive to ethnic solidarity parallel those described by Marx (1852) and Marx and Engels (1848) as conducive to class solidarity. These include (1) substantial economic inequality, (2) the perception of this inequality as part of a pattern of collective oppression, and (3) adequate communication among members of the oppressed group (Hechter, 1975:42). Hechter adds to the Marxian framework the stipulation that when cultural distinctions coincide with class distinctions, the result is ethnic (actually, ethnic-class) solidarity as opposed to class solidarity. With respect to the conditions that generate ethnic mobilization, Hechter emphasizes the disillusionment of Celtic industrial

workers with British national working-class organizations:

The years of depression in Scotland and Wales have begun to erode the strong class-conscious links of the peripheral working class to [British] national institutions. . . . [The Labour party] can no longer be counted on to protect their jobs, because, in large measure, traditional employment in heavy industries has gradually disappeared. (Hechter, 1975:309).

At the heart of ethnic affinity and ethnic mobilization, therefore, according to Hechter, are the structural and circumstantial conditions of working-class solidarity and action.²

The Ethnic Competition Perspective

Among the proponents of this perspective (Deutsch, 1953; Van den Berghe, 1967; Barth, 1969; Nielsen, 1977; 1978a; 1973b; Hannan, 1979), a common theme is that ethnic mobilization is a consequence of the competition between groups for roles and resources. In this perspective ethnic relations are likely to be stable when ethnic groups in a polyethnic situation occupy distinct structural positions in a functional division of labor (i.e., when there is a cultural division of labor) or when ethnic groups are territorially separate (Barth, 1969:9-38). A stable ethnic situation, however, may be disrupted by economic changes if these changes cause formerly separate but interdependent ethnic groups to compete for the same rewards and resources.

Hannan (1979), following Barth (1969), links ethnic identity and action to ecological processes and constraints. Specifically, he argues that economic and political modernization affects ethnicity in two, apparently contradictory ways.

(1) *Modernization reduces ethnic diversity.* Hannan's argument here is consistent with developmental logic (see above), except that his formulation is strictly ecolog-

¹ Censuses of population, particularly those of the late nineteenth century and first half of the twentieth century, consistently show the overrepresentation of these industries in the occupational composition of Wales and Scotland relative to England. The overrepresentation of these industries accounts in part for the slower rates of economic growth and the higher rates of unemployment in these areas (Hechter, 1975:298-310; Thomas, 1962:55-71).

² Hechter (1975:308), for example, makes much of the fact that the first Plaid Cymru election victory occurred in one of the more industrial constituencies (Carmarthenshire). He fails to follow this up, however, with statistical analyses of areal variations in Plaid Cymru voting.

ical. In a nutshell, he argues that modernization "joins the fate of previously unconnected populations" (Hannan, 1979:24). This connecting process undermines the ecological bases of ethnic diversity and erodes small-scale, ecologically bound ethnic identities.

(2) *Modernization increases the likelihood of large-scale ethnic political mobilization.* This second consequence of economic and political modernization follows more directly the logic of competition and selection: as subsystems within a larger system (e.g., a nation-state) become more connected and the size of the interacting population increases, the conditions of organization and competition are altered. Specifically, because the size and strength of the largest competitor (i.e., the core or center) increases, attempts at organized resistance to the core will be more successful if they are organized around large-scale identities (Hannan, 1979:31). Assuming individuals possess multiple cultural identities of varying scale or generality, the larger the population attached to a given cultural identity, the more likely it is that the identity will be used successfully as a basis for mobilization. In short, selection processes are altered by modernization such that large scale cultural identities, if available, are favored.

The predictions of the ethnic competition perspective concerning the conditions which generate ethnic mobilization differ dramatically from those of the reactive ethnicity perspective. According to the latter, ethnic mobilization may supplant class mobilization given the failure of class mobilization to provoke the core to stymie the relative economic decline of the periphery. Deteriorating economic conditions in the periphery cause the disillusionment of periphery workers with polity-wide working-class organizations. According to the ethnic competition perspective, however, it is the creation of new competitive opportunities that provokes ethnic mobilization. The disruption of a separate but interdependent status of ethnic groups should lead to ethnic competition and mobilization. This is most likely when new competitive opportunities are introduced (e.g., by economic diversification). Thus, given the

availability of large-scale cultural identities and the introduction of new economic rewards or resources, ethnic mobilization is likely.

WELSH ETHNICITY

There is considerable evidence that many of the structural conditions described by Hechter and Gellner obtained in Wales. A cultural division of labor was clearly in evidence in preindustrial, traditional Wales. During this period Wales was dominated by an anglicized (and Anglican) aristocratic society that included landlords, their farm managers and the representatives of the Church of England (Cox, 1970:127-34; Hechter, 1975:79-123). These English-speaking elites dominated a Nonconformist, Welsh-speaking tenantry. Wales was represented in Parliament by this Anglicized, landlord class, and these same landlords dominated local judicial and political functions (Cox, 1970:133).

"The nineteenth century produced a massive industrial exploitation of Wales" (Philip, 1975:2). There were great shifts of population from agrarian North Wales to the industrial South. "Between 1815 and 1914 the population of Wales rose fourfold, more so in Glamorgan and Monmouthshire [in South Wales] which together contained by 1914 over 60 percent of the entire population of Wales" (Philip, 1975:3). In Table 1 we show this explosion of population and industry in South Wales with data from seven censuses of population. We contrast the two most populous counties of South Wales (Glamorgan and Monmouthshire) with three agrarian counties of North Wales (Anglesey, Caernarvon and Merioneth). The dynamic character of the South Wales economy is illustrated by the rapid population growth rate maintained over this period and by the gradual and continual decline in percentage employed in agriculture. The slow relative growth of the population of the three North Wales counties (some decades registered an absolute decline in population) and the continued importance of agriculture testify to the economic stagnation of the North.

The influx of uprooted Welshmen in

Table 1. Selected Social Indicators for Two South Wales and Three North Wales Counties, 1851-1911

Year	South Wales		North Wales	
	Decennial Population Growth Rate	% Employed in Agriculture	Decennial Population Growth Rate	% Employed in Agriculture
1851	1.26	22	1.07	47
1861	1.24	18	1.00	50
1871	1.19	13	1.05	41
1881	1.17	11	1.07	44
1891	1.26	8	.98	48
1901	1.21	7	1.03	34
1911	1.32	5	.98	39

South Wales often resulted in the conditions favorable to ethnic consciousness cited by Gellner and Hechter. D. Williams (1950:246) argues that:

The ironmasters, many of whom had their origins in English middle class Dissent, became allied through marriage, and association with the gentry, and adopted their Anglicanism. Seldom did the Welsh workmen attain to high administrative posts. "In the works," says a government investigator in 1847, "the Welsh workman never finds his way into the office. He never becomes either clerk or agent. He may become an overseer or contractor, but this does not take him out of the labouring and put him into the administering class."

(See also G. Williams, 1971:11.) Acrimonious industrial relations tended to coincide with this culturally-based division of labor. Morgan (1970:254) notes, for example, that industrial strife was common in the eastern part of the South Wales industrial belt where there is evidence of a cultural division of labor. (See also Cox, 1970:137-8.) Industrial relations in the western portion of this belt did not sour until the late 1800s and early 1900s as the ownership of the mines became concentrated in the hands of a few outsiders (Cox, 1970:143-9; Evans, 1961:137-45), and the failure of the sliding scale (which linked wages to the market price of coal) destroyed the community of interests of workers, managers and owners (Brennan et al., 1954:139-54).

According to the logic of the reactive ethnicity perspective, the conditions cited above increase the salience of class and ethnic solidarity. To the extent that a cultural division of labor accompanied these industrial developments, Welsh ethnic affinity was maintained and enhanced by the industrialization of South Wales.

Whatever the fate of ethnic *affinity* in South Wales, the empirical evidence shows that a secular decline in cultural distinctiveness accompanied industrialization. Hechter (1975:182) comments that most of Wales was Welsh speaking in the year 1800. By 1891, however, the proportion of Welsh speakers in Wales had declined to .544, and between 1911 and 1971 the proportion declined from .350 to .196 (Morgan, 1970:315; Great Britain Office of Population Census and Surveys, 1971:132). The evidence on Welsh monoglots is even more striking. Between 1911 and 1971 the proportion of Welsh monoglots declined by a factor of 6.5, from .085 to .013 (Great Britain Office of Population Census and Surveys, 1971:132).

To what extent was this decline due to the industrialization of Wales? The available evidence shows that over time, Welsh speaking has become more and more concentrated in the least industrialized areas of Wales. In Table 2 we show the unstandardized regression coefficients from the regression of percentage of Welsh speakers on percentage employed in manufacturing occupation at five points in time from 1921 to 1971. These coefficients increase in magnitude over time from -.74 in 1921 to -1.49 in 1971. The correlations between these two measures over the same period range from -.54 in 1921 to -.69 in 1961. (See Table 2.) This pattern suggests a concentration of Welsh speakers in rural, agricultural areas where distinct cultural practices were sheltered from the onslaught of industrialization.

Despite this clear erosion of traditional Welsh culture, 69% of the Wales resident population continue to identify themselves as Welsh as opposed to British (15%) or English (13%). (See Philip,

Table 2. Regression of Percentage of Welsh Speakers on Percentage of Manufacturing Employees, 1921-1971

Dependent Variable	Independent Variable	
Percentage Welsh Speaking in . . .	Constant	Percentage Employed in Manufacturing
1921 Beta		-.543
b	.852	-.736
p	.004	.050
1931 Beta		-.482
b	.793	-.674
p	.007	.095
1951 Beta		-.665
b	.748	-.891
p	.001	.013
1961 Beta		-.693
b	.982	-1.311
p	.002	.009
1971 Beta		-.642
b	.669	-1.491
p	.003	.018

1975:131.) Furthermore, there are only slight areal variations in the extent to which the residents of Wales claim this ethnic label: the percentages range from about 65% in industrial South Wales to about 70% in the more traditional North Wales (Philip, 1975:132). The fact that Welsh ethnic identity is more widespread than the practice of Welsh traditionalisms (e.g., Welsh speaking) suggests that ethnic political mobilization based on ethnic culture may find only limited success. We turn now to an examination of political expressions of Welsh ethnicity in the light of this reasoning.

POLITICAL EXPRESSIONS OF WELSH ETHNICITY

There have been flurries of Welsh ethnic mobilization for over a century; these have mostly taken the form of political agitation for a Wales independent from England. The present Welsh nationalist party, the Plaid Cymru, was antedated in 1886 by the Cymru Fydd or Young Wales movement. This movement was founded by South Wales Liberals, mostly middle-class Nonconformists, who sought greater recognition of unique Welsh problems by the national Liberal party, especially before Parliament. The movement expanded rapidly in the early 1890s in both North and South Wales; eventually it came to be

dominated by the more Welsh-traditional North Wales Liberal Association.

Though the Cymru Fydd movement collapsed after only a few years of activity, Liberals in Wales continued to voice Welsh national interests. Liberal party M.P.s sponsored several home-rule measures before Parliament throughout the pre-World War I and interwar periods. It was not until the virtually total eclipse of the Liberal party by Labour in Wales that serious Liberal agitation for home-rule for Wales declined. Throughout the period of agitation, the Liberal appeal to the Welsh was strongly cultural, emphasizing the distinctiveness of Welsh Nonconformity and the Welsh language. Even though the Plaid Cymru recently has usurped the Liberal party as the voice of Welsh nationalism, many Liberal candidates continue to describe themselves as "liberal and [Welsh] national" (Madgwick et al., 1973:45-65).

At its outset, the modern Welsh national party, the Plaid Cymru, was also somewhat cultural in orientation, basing its appeal on the endangered condition of the Welsh language. Established in 1925, long after the collapse of the Cymru Fydd, the party established three goals: (1) to make the Welsh language the only official language of Wales, (2) to require all public servants in Wales to conduct their affairs in Welsh, and (3) to establish the Welsh language as the medium of education in Wales. More recently, however, the Plaid Cymru has begun to emphasize economic issues. The Plaid Cymru formulated the first national economic plan for Wales and, since 1966, has made a concerted effort to convince Welsh voters of the economic benefits that will follow from self-government. Despite this new concern for economic issues, the Plaid continues to stress cultural issues, particularly those surrounding the waning Welsh tongue.

There is fragmentary evidence that the uneven erosion of Welsh culture has presented obstacles to ethnic political mobilization. As mentioned above, the Liberal party has always maintained a strongly cultural appeal, stressing its links with Welsh Nonconformity. The Liberal party's strongly cultural stance accounts,

in part, for its quick demise following working-class mobilization by the Labour party during the interwar period. The *Cymru Fydd* (Young Wales movement) foundered on the incompatibility of the "cosmopolitan" interests of the industrial South and the cultural interests of the traditional North (Ragin and Davies, 1978). (A contemporary observer, for example, commented that "the cosmopolitan population of the great towns of South Wales will never submit to the domination of Welsh ideas" [see G. Evans, 1973:47; Morgan, 1970:163].) The fate of the *Plaid Cymru*, perhaps until recently, has been similar. It was not until the *Plaid Cymru* supplemented its cultural stance with economic positions in the late 1960s that the *Plaid* attracted strong support outside of Welsh-speaking areas (Philip, 1975:117-8).

The empirical evidence suggests that this tendency to emphasize cultural issues has restricted the appeal of Welsh ethnicity as a basis for political mobilization. Table 3 shows the correspondence between support for the two parties most sensitive to Welsh interests and an indicator of Welsh cultural traditionalism, the percentage of Nonconformist marriages. The zero-order correlations of Liberal support with Nonconformity range between .755 in 1950 and .277 in 1974, while the correlations of *Plaid Cymru* support with Nonconformity range between .436 in 1950 and .917 in 1966.³ These bivariate analyses, of course, present a one-sided view of the social bases of Welsh ethnic political mobilization; they underscore, however, the link between the cultural tone of Welsh national appeals and the relatively limited success of these appeals outside of Welsh cultural strongholds.

HYPOTHESES

The strong correlations between Welsh cultural traditionalism and ethnic political mobilization shown above suggest a pattern consistent with the developmental

Table 3. Correlations of Liberal and National Support with Nonconformity, 1935-1974

Year	Liberal Support	Nationalist Support
1935	.497	*
1945	.732	*
1950	.755	.436
1955	.670	.801
1959	.642	.804
1964	.599	.875
1966	.414	.917
1970	.515	.796
1974	.277	.825

* Nationalist support negligible.

perspective. According to the logic of this perspective, ethnic political mobilization in an advanced society results from the possible residues of peripheral cultural traditionalism which may exist in the least developed areas of a periphery. A combination of cultural persistence and relative economic isolation from the core (i.e., underdevelopment) in this perspective, provides a favorable setting for culturally-based opposition to the core: the less developed an area, the greater the salience of cultural traditionalism and the greater the likelihood of ethnic mobilization.

According to the reactive ethnicity perspective, however, ethnic identity is enhanced by the cultural division of labor which is often associated with dependent, internal colonial development. Dependent industrial development should be particularly conducive to ethnic mobilization because the conditions that enhance class solidarity are thought also to enhance ethnic solidarity. Thus, according to this perspective, those areas of the periphery which have experienced dependent industrial development should be most responsive to an ethnic appeal. Furthermore, the fact that the Labour party has failed to prevent the decline of heavy industry in Wales increases the likelihood that ethnic mobilization should supersede class mobilization.

The ethnic competition perspective predicts that ethnic political mobilization is most likely in those areas of Wales where economic diversification has occurred, not in those areas dominated by the stagnant industrial appendages of the

³ Essentially identical results are obtained when the percentage of Welsh speakers is used as an indicator of cultural persistence instead of the percentage of Nonconformist marriages. The cross-sectional correlations between these two measures are about .90.

core English economy. No longer is the entire Welsh economy dominated by mining and heavy manufacturing. The tertiary sector has expanded, and new, more advanced industries have been established (Thomas, 1962:30-49). In such sectors it is less practical to implement a cultural division of labor because of a greater diversity of tasks and a lower level of labor intensity. In general, because competition for new roles and resources is more intense in areas of economic diversification, an ethnic appeal is likely to be much more successful. Ethnic competition, and therefore mobilization, is less likely in less developed areas or in areas where a cultural division of labor is prevalent.

None of the arguments outlined above would deny that ethnic political mobilization should be high in areas where Welsh cultural traditionalisms have persisted. Because all attempts at ethnic mobilization, in varying degrees, have emphasized Welsh culture, it follows logically that the most culturally Welsh areas should be most responsive to these appeals. In Table 2 we showed the relationship between the percentage of Welsh speakers, an indicator of Welsh cultural traditionalism, and the percentage employed in manufacturing occupations. While these correlations are all negative, they show that the association between these two measures is far from perfect. In fact, though Welsh cultural traditionalism tends to be high in the least developed (i.e., agricultural) areas, some of the more industrial areas and some of the areas of economic diversification also show sizeable proportions of Welsh speakers and of Nonconformist marriages (both indicators of Welsh cultural traditionalism). Given that there is an imperfect fit between economic conditions and the cultural bases of ethnic political mobilization in Wales, it is necessary to test for the possibility that the theoretically specified structural preconditions outlined above may result in ethnic mobilization only within an appropriate cultural context. In other words, because cultural persistence seems to be an important factor as far as ethnic mobilization is concerned, it is necessary to assess the effect of structural factors on

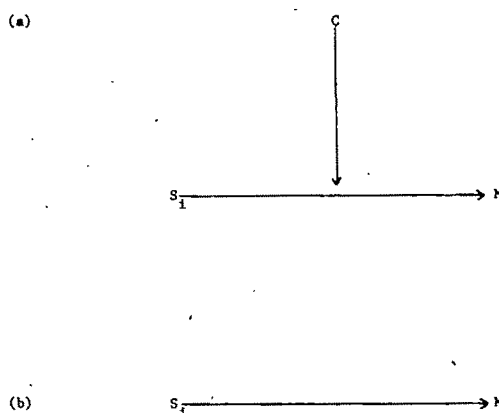


Figure 1. Generic Models Appropriate for Assessing the Social Structural and Cultural Bases of Ethnic Mobilization

the success of the ethnic appeal *relative to* variation in cultural context.⁴

In Figure 1(a) we show the generic model for this kind of assessment. In this model variation in ethnic mobilization (M) is seen as a function of variation in the strength of the cultural bases for ethnicity (C) and social structural conditions (S_1). Additionally, the degree to which particular social structural conditions provoke ethnic mobilization is modified by cultural context. Thus, cultural and economic factors may influence ethnic mobilization directly and additively, or they may be joint preconditions for the activation of ethnic political mobilization.

The specific social structural conditions that favor a greater activation of ethnicity, of course, vary from theory to theory. The developmental perspective argues that the activation of ethnicity should be greatest in the least modernized areas of the periphery; the ethnic competition perspective argues that activation should be greatest in the most modernized and diversified areas, while the reactive ethnicity perspective argues that activation should be greatest where dependent industries predominate.

⁴ Note that none of the perspectives outlined above explicitly specifies an interactive formulation. However, the interactive model we propose does not violate the arguments of the theoretical perspectives we examine; in fact, this formulation provides a more stringent test of each perspective.

In Figure 1(b) we show a simpler model applicable to those cases (e.g., Flemish areas of Belgium) in which there are no extreme variations in the cultural bases for ethnic mobilization. Since C is a constant in this latter case, the interaction model (a) reduces to the simple additive model (b) in which mobilization is an additive function of social structural conditions.

Finally, it should be noted that different patterns of results may obtain in the analyses of the support for the two Welsh sympathetic parties. Ethnic political mobilization via Liberal party support predated class mobilization and serious Labour party contention for the control of the British state. In Wales, Labour mobilization virtually extinguished support for the Liberal party in many areas. This pattern is consistent with the developmental argument that class alignments based on "interests" supersede cleavages between "value communities" (Lipset and Rokkan, 1967:21). Because the experience of the Liberal party in Wales follows closely the historical argument of the developmental perspective, it is possible that the results from the analyses of liberal voting will contradict the results from the analyses of Plaid Cymru voting. Of course, the analysis of Plaid Cymru support is a more crucial test of the three perspectives because the most important question is one of ethnic resurgence. Thus, a pattern of results from the analysis of Liberal support consistent with the developmental perspective does not necessarily falsify the arguments of the other two perspectives because they are more concerned with resurgent ethnicity as indicated by Plaid Cymru support.⁵

DATA AND MEASURES

The measures used in this study are based on data from the *County Reports* of the *Census of England and Wales* for the years 1931, 1951, 1961 and 1971, from *Parliamentary Election Results* (1918 to 1945 and 1950 to 1970) compiled by F. W. S.

⁵ Furthermore, support for the developmental perspective from the analyses of Liberal voting also verifies the competition perspective. See discussion section below.

Craig, and from the *Annual Reports* of the Registrar of Births, Deaths and Marriages. The 1974 election results were taken from Butler and Kavanaugh (1975). The constituency election results were aggregated into county data to conform to the census data. To match the census data to the election data we interpolated and extrapolated the decennial census data to conform to election dates. We analyze the results of the elections of 1935, 1945, 1950, 1955, 1959, 1964, 1966, 1970, and 1974. The election of 1935 was selected as the starting point because it marks the beginning of "the third period in modern British politics, the period of Labour-Conservative predominance" (Kinnear, 1968:52). "After the election of 1935 there were far fewer anomalies of the sort which had marked the elections of the 1920s, and most seats were won or lost on a fairly predictable basis, related to their social composition" (Kinnear, 1968:52). With these data we constructed two dependent variables and four independent variables.

The dependent variables are measures of ethnic political mobilization. They are (1) percentage of electors voting for the Liberal party (*Liberal support*) and (2) the percentage of electors voting for the Plaid Cymru, the Welsh nationalist party (*Nationalist support*). Liberal party support was chosen because the party, in effect, has been a Welsh nationalist party since 1868 (Morgan, 1970:28-75). (See above.) Home rule for Wales has often been the policy of the Liberal party in Wales, and it has sponsored many home-rule measures in Parliament. Support for the Plaid Cymru is a more obvious measure of ethnic mobilization; this party advocates Welsh separatism, a position too extreme for the Liberal party since the latter seeks the support of voters throughout the British polity.

To measure the variation in the cultural bases for ethnic mobilization, we use a single measure, strength of Nonconformists as indicated by the percentage of Nonconformist marriages. This measure has been used by Ragin (1977) and by Hechter (1975) who gives a detailed justification for the measure. It is preferable to a linguistic measure such as the percentage of Welsh speakers because of the de-

cline in Welsh speaking over the period of observation (see above and Hechter, 1975:167-91).

The other three independent variables are measures of structural conduciveness as specified by the three perspectives discussed above.

According to the developmental perspective the ethnic appeal should be most successful in the least modernized areas since modernization implies a universalistic allocation of roles and resources and a consequent decline in the relevance of ethnicity. The traditional Welsh economy is agricultural. To measure modernization negatively, therefore, we use the percentage of adult males employed in agriculture. According to developmental logic, as the percentage in agriculture increases, the potential for ethnic mobilization should also increase.

According to the logic of the reactive ethnicity perspective, a predominance of dependent periphery industries of the sort described above (e.g., mining) should enhance the viability of the ethnic appeal. In such industries a cultural division of labor is most likely; consequently, ethnic solidarity should be greatest. To measure the prevalence of these structural conditions we use the percentage of adult males employed in mining, metallurgical and other heavy manufacturing industries.

As an indicator of the prevalence of the conditions conducive to ethnic competition we use the percentage of the adult males employed in the tertiary sector and in advanced industries. According to the ethnic competition perspective, in the most modernized sectors of the economy ethnic competition creates conditions favorable to ethnic mobilization.

METHODS AND ANALYSIS

The generic model depicted in Figure 1(a) is a conduciveness interaction model of the sort described by Southwood (1978:1154-203) and implemented by Chirot and Ragin (1975:435-41). Briefly, this model allows the strength of the relationship between the structural bases for ethnic mobilization (S) and the actual mobilization of ethnicity (M) to vary as a function of cultural context (C).

Additionally, cultural context may have a direct, additive effect on mobilization. The model can also be described with the following equation:

$$M = A_0 + (B_0 + B_1C)S + A_1C + E;$$

expanded:

$$M = A_0 + B_0S + B_1CS + A_1C + E,$$

where:

- M = degree of ethnic mobilization,
- A₀ = regression constant,
- B₀, B₁, A₁ = unstandardized regression coefficients,
- C = strength of cultural basis for ethnicity,
- S = theoretically specified social structural condition,
- CS = multiplicative interaction of C and S.

The above equation has the familiar form of the multivariate regression with a multiplicative interaction term. In the analysis below we compute this equation with the two dependent variables (Liberal support and Nationalist support) in both additive and interactive formulations. We vary the S term according to the specifications of each of the three theories.

We use the technique of pooled cross-sections in these analyses to take into account the stable but particularistic characteristics of each of the counties included in the statistical analysis (see Hannan and Young, 1977:52-83).⁶ We model these case-specific disturbances with 12 dichotomous variables since there are 13 counties. We also attempt to control for period specific disturbances which affect the computation of the intercept by including dichotomously coded variables for each of the elections. Thus, in the analyses of Liberal support we include 12 dichotomously coded county variables and eight dichotomously coded election variables in the analysis of nine pooled cross-sectional analyses (the elections of

⁶ We use the method of pooled cross-sectional analysis to increase our total number of observations and thereby allow the use of multivariate techniques for the analysis of the effects of several independent variables simultaneously.

1935, 1945, 1950, 1955, 1959, 1964, 1966, 1970, 1974). In the analyses of Nationalist support we include the 12 dichotomously coded county variables and six dichotomously coded election variables in the analysis of seven pooled cross-sectional analyses (the elections of 1950, 1955, 1959, 1964, 1966, 1970, 1974).⁷

Twelve separate regression equations were computed as follows:

A. Test of Developmental Perspective

1. Additive:

$$L \text{ or } W = a + b_1C_1 + c_1T_1 + d_1A + d_2N + e.$$

2. Interactive:

$$L \text{ or } W = a + b_1C_1 + c_1T_1 + d_1A + d_2N + d_3AN + e.$$

B. Test of Reactive Ethnicity Perspective

1. Additive:

$$L \text{ or } W = a + b_1C_1 + c_1T_1 + d_1P + d_2N + e.$$

2. Interactive:

$$L \text{ or } W = a + b_1C_1 + c_1T_1 + d_1P + d_2N + d_3PN + e.$$

C. Test of Ethnic Competition Perspective

1. Additive:

$$L \text{ or } W = a + b_1C_1 + c_1T_1 + d_1M + d_2N + e.$$

2. Interactive:

$$L \text{ or } W = a + b_1C_1 + c_1T_1 + d_1M + d_2N + d_3MN + e,$$

where,

L = Liberal support,

W = Nationalist support,

a = regression constant,

b_1, c_1, d_1, d_2, d_3 = unstandardized regression coefficients,

C_1 = dichotomously coded county variables (12),

T_1 = dichotomously coded election variables (eight or six),

A = percentage employed in agriculture,

N = percentage of Nonconformist marriages,

P = percentage employed in periphery industries,

M = percentage employed in "modern" economic sectors,

AN, PN, MN = multiplicative interaction terms,

e = error term.

The results of these analyses are reported in Tables 4 (Liberal support) and 5 (Nationalist support). The analyses reported in Table 4 are based on nine pooled cross-sections of 13 Welsh counties. The total number of observations is 117. The county data in the statistical analyses were weighted by population, but the number of degrees of freedom for significance testing purposes was set at 117. The analyses reported in Table 5 are based on seven pooled cross-sections of 13 Welsh counties, resulting in 91 observations. The county data in these analyses also were weighted by population; the number of degrees of freedom was set at 91, in line with the true number of observations.

The results of the analyses of Liberal support (Table 4) provide strongest support for the developmental perspective. The additive equations (A1, B1 and C1) show that the structural condition most favorable to Liberal support is a predominance of employment in agriculture. The structural condition least favorable to Liberal support is a predominance of employment in periphery industries. Thus, when structural conditions most conducive to class mobilization (a predominance of periphery industries) are present, ethnic mobilization, as indicated by Liberal support, is lowest; when conditions least conducive to class mobilization are present (a predominance of agricultural employment) ethnic mobilization is greatest. Further, to the extent that a predominance of agricultural employment indicates a relative isolation from the national economy, the lower the level of

⁷ The dichotomously coded variables also correct for the autocorrelation (Hanushek and Jackson, 1977), often problematic in pooled cross-sectional analyses. Suspecting heteroskedasticity, we reran the analysis with a WLS technique outlined by Glejser (1969). No significant or important differences were obtained with this technique.

Table 4. Analysis of Liberal Support, 1935-1974

Equation	Constant	A	P	M	N	I@	T ₁	C ₁	R ²
A(1) Beta		.367			.205		.272#	.407#	.819
b	-.023	.395			.318				
p	ns	.003			ns		.050	.050	.000
(2) Beta		.025			.104	.339	.274#	.381#	.820
b	.035	.027			.161	.774			
p	ns	ns			ns	ns	.050	.050	.000
B(1) Beta			-.468		.299		.481#	.465#	.821
b	.210		-.564		.464				
p	ns		.002		ns		.050	.050	.000
(2) Beta			-.710		.230	.227	.479#	.465#	.822
b	.256		-.857		.357	.809			
p	ns		ns		ns	ns	.050	.050	.000
C(1) Beta				-.114	.347		.285#	.523#	.802
b	.008			-.133	.538				
p	ns			ns	ns		.050	.050	.000
(2) Beta				.588	1.015	-.799	.274#	.565#	.819*
b	-.486			.685	1.572	-1.571			
p	ns			ns	.010	.029	.050	.050	.000

Notes: A=% in agriculture; P=% in periphery industries; M=% in tertiary and advanced industries; N=% Nonconformists; I=multiplicative interaction term; T₁=election dichotomous variables; C₁=county dichotomous variables; R²=explained variance; * indicates equations in which the interaction term contributed significantly to the explained variance beyond the additive effects of its component variables; @ the interaction term in eq. A(2) is A × N; the interaction term in eq. B(2) is P × N; the interaction term in eq. C(2) is M × N; # indicates betas based on independent contribution to explained variance by sets of dichotomous variables.

integration with the national economy, the greater the level of ethnic mobilization.

The examination of equations A2, B2 and C2, which include interaction effects, does not contradict this conclusion. A significant R-square increment is obtained

only in equation C2. The coefficients reported for C2 indicate that the greater the persistence of Welsh cultural traditions, the more negative the effect of employment in the tertiary and advanced industries on Liberal support. Alternatively,

Table 5. Analysis of Nationalist Support, 1950-1974

Equation	Constant	A	P	M	N	I@	T ₁	C ₁	R ²
A(1) Beta		-.359			.245		.615#	.288#	.863
b	-.066	-.230			.176				
p	ns	ns			ns		.050	.050	.000
(2) Beta		.996			1.027	-1.856	.606#	.298#	.889*
b	-.271	1.555			.739	-2.506			
p	.018	.003			.034	.000	.050	.050	.000
B(1) Beta			.015		-.343		.638#	.345#	.857
b	.053		.011		-.247				
p	ns		ns		ns		.050	.050	.000
(2) Beta			1.421		-.093	-1.147	.637#	.361#	.868*
b	-.055		1.019		-.067	-2.556			
p	ns		.030		ns	.021	.050	.050	.000
C(1) Beta				.309	.186		.430#	.255#	.864
b	-.223			.252	.134				
p	ns			.050	ns		.050	.050	.000
(2) Beta				-1.126	-2.075	2.377	.437#	.295#	.892*
b	.599			-.919	-1.494	2.192			
p	.017			.003	.003	.000	.050	.050	.000

Notes: A=% in agriculture; P=% in periphery industries; M=% in tertiary and advanced industries; N=% Nonconformists; I=multiplicative interaction term; T₁=election dichotomous variables; C₁=county dichotomous variables; R²=explained variance; * indicates equations in which the interaction term contributed significantly to the explained variance beyond the additive effects of its component variables; # indicates betas based on independent contribution to explained variance by sets of dichotomous variables; @ the interaction term in eq. A(2) is A × N; the interaction term in eq. B(2) is P × N; the interaction term in eq. C(2) is M × N.

they could indicate that the greater the employment in the tertiary and advanced industries, the weaker the positive effect of cultural persistence on Liberal support. Both interpretations are consistent with developmental logic.⁸

The results of the analysis of Nationalist support reported in Table 5, however, do not support the developmental argument; they support instead the ethnic competition perspective. Equations A1, B1 and C1 show that the only structural condition that increases Nationalist support is a high level of employment in tertiary and advanced industries (M). These, presumably, are the most modern sectors of the economy, where competition is greatest. High employment in agriculture or in periphery industries does not increase nationalist support; the coefficients for A in equation A1 and P in equation B1 are both nonsignificant. Thus, neither the developmental nor the reactive ethnicity perspective is supported.

The results of the analyses with interaction terms show a significant contribution to the explained variance in each equation. However, the signs of the coefficients associated with the interaction terms are in the wrong direction in equations A2 and B2. The developmental perspective predicts that the combined effect of a high level of employment in agriculture and cultural persistence should be to increase the salience of ethnicity; in fact, the effect is to reduce its salience, as far as Nationalist support is concerned. The reactive ethnicity perspective predicts that where high employment in periphery industries and cultural persistence coincide, the likelihood of ethnic mobilization is greatest; again, the coefficient associated with this interaction term is negative, indicating that their joint effect is negative.

⁸ One could invert this logic still another way and argue that the larger the non-Welsh-speaking population, the more positive the effect of tertiary employment on Liberal support. This interpretation would contradict, however, the known correspondence between Welsh traditionalism and Liberal support. In any event the proportion of explained variation attached to this equation (Table 4, C2) is smaller than those attached to equations A1 and B1 which support, in a much simpler way, the developmental perspective.

The interaction of employment in tertiary and advanced industries with our indicator of cultural persistence, the percentage of Nonconformist marriages, however, shows that their joint effect is positive, indicating that where cultural persistence and employment in the most modern economic sectors coincide, the likelihood of ethnic mobilization is greatest. The coefficient for this term is positive and significant. This supports the ethnic competition perspective.

DISCUSSION: THE HISTORICAL CONTEXT OF ETHNIC POLITICAL MOBILIZATION

The analyses of Liberal support confirm the predictions of the developmental perspective, while the analyses of Nationalist support confirm the predictions of the ethnic competition perspective. While this may appear contradictory, the findings can be reconciled when viewed in historical perspective.

The Liberal party historically has been the national party of Wales. In its heyday the central tenets of Liberal party philosophy (e.g., Nonconformity, tolerance; individualism) coincided very neatly with those of Welsh culture (Philip, 1975:303-12). The integration of the Welsh into the British polity via Liberalism was disrupted by class politics, in general, and by the Labour party, in particular. Labour usurped the Liberals in the industrial and mining areas of South Wales. The Labour party became entrenched in industrial Wales during the interwar period, and after World War II Labour was dominant in virtually all areas of Wales, winning, for example, 32 of the 36 Welsh seats in Parliament in the election of 1966. (The Liberals won only a single seat in this election.) Liberal support was gradually confined to the least industrial (i.e., most agricultural) areas of Wales during this period. This pattern, the gradual erosion of the support for a party making a cultural appeal, follows precisely the historical argument of the developmental perspective. Lipset and Rokkan would argue that the effect of class politics in Wales was to divide and erode a value community and to magnify the importance of economic interests.

The Plaid Cymru, on the other hand, is

a creature of the modern era. The party grew as the Welsh economy diversified during the post-World War II period; the biggest increase in the party's strength occurred between the elections of 1966 and 1970 when the ratio of Welsh unemployment to unemployment in Great Britain as a whole decreased from 1.75 to 1.45 (Great Britain Central Statistical Office, 1975:35). The Nationalists gather most support in areas that are neither heavily industrial nor agricultural. This suggests that, on one hand, is it not the party of a threatened cultural minority, nor on the other, is it the party of an ethnic-class conscious industrial proletariat. Rather, the *Plaid Cymru* attempts to be the truly Welsh party of modern Wales, combining a cultural appeal and a Welsh-national economic appeal. Philip (1975:312) argues that even though the Liberals and the Welsh Nationalist "share many of the same cultural ideals," they differ "in the extent of their tolerance and radicalism." Thus the Liberals allow themselves to appear as a relatively conservative party, a Welsh alternative to the British Conservative party, while the Nationalists tend to attract those who are more strident in their Welshness. This, in part, explains the pattern of results shown above. In more agricultural areas Welsh political mobilization takes on a more conservative character via Liberalism, while in those areas that are neither heavily industrial nor agricultural it takes on a more strident character via *Plaid Cymru* support. Neither party does well in the most heavily industrialized areas of Wales. The hold of the Labour party and class politics on these areas appears to be absolute.

Evidence concerning the composition of the membership of the *Plaid Cymru* also supports the ethnic competition perspective. According to Philip (1975:160) the "knowledge industry," or the intelligentsia, broadly defined, is grossly overrepresented in the membership of the *Plaid Cymru*. Coupland (1954) notes an overrepresentation of college graduates of all kinds. The overrepresentation of the intelligentsia in nationalist movements, in general, has been noted by Smith (1971:109-50) and Gellner (1969:168-71). The simplest explanation of their overrepre-

sentation is that they have the most to gain should the nationalist enterprise succeed—a monopoly on the roles and resources for which they now must compete. In this light, ethnic mobilization can be seen as an attempt to gain a competitive edge in the struggle for roles and resources.

It should be noted that even though the findings relative to Liberal voting support the developmental perspective, they also support the competition perspective. In some respects the competition perspective subsumes the developmental. The former argues that modernization, both political and economic, erodes small-scale, ecologically bound cultural identities; the latter argues that modernization (particularly, industrialization and urbanization) reduces the importance of "value communities."⁹ To the extent that Liberal party support in the more traditional areas of Wales is an historical residue of small-scale value communities, our findings relative to Liberal support are consistent with both perspectives.¹⁰

Finally, this study suggests that the uneven erosion of a periphery culture may present an obstacle to ethnic mobilization. The correlations presented in Table 3 and the regression analyses presented in Tables 4 and 5 underscore the cultural bases of ethnic political mobilization in Wales. If appeals to Welsh ethnicity remain strongly cultural, it is unlikely that these appeals will find much success in the industrial South of Wales. It is possible to imagine a noncultural Welsh nationalist movement finding support in these areas. Its appeal would have to be based simply

⁹ These two perspectives also converge with respect to predictions concerning the future of the Liberal party in Wales. Both would argue that in Wales the Liberal party should lose its traditional Welsh character and become more similar to the Liberal party in England. The fact that the correlation between the percentage of Nonconformist marriages and Liberal support in Wales was only .277 (see Table 3) in the election of 1974 seems to support this projection.

¹⁰ Morgan (1970:22-7), for example, argues that the endearment of the Liberal party to the Welsh occurred as a result of "The Great Election of 1868" which involved primarily local conflicts between Tory landlords and the Welsh tenantry in the countryside.

on Welsh identification, which has been shown to be more widespread and more uniformly distributed in Wales than Welsh cultural traditionalisms such as Welsh speaking (see above). This is not the present trend, however. Under the assumptions of the model illustrated in Figure 1(a), the present potential for ethnic mobilization in Wales is restricted by the waning persistence of Welsh culture.

REFERENCES

- Alford, Robert
1963 *Party and Society: The Anglo-American Democracies*. Chicago: Rand McNally.
- Allardt, Erik and Yrjö Littunen
1964 *Cleavages, Ideologies and Party Systems*. Helsinki: Academic Bookstore.
- Barth, Fredrik
1969 *Ethnic Groups and Boundaries*. Boston: Little, Brown.
- Brennan, Thomas, E. W. Cooney and H. Pollins
1954 *Social Change in South West Wales*. London: Watts.
- Butler, David and Dennis Kavanaugh
1975 *The British General Election of February 1974*. New York: Macmillan.
- Butler, David and Donald Stokes
1969 *Political Change in Britain*. New York: St. Martin's.
- Chiot, Daniel and Charles Ragin
1975 "The market, tradition and peasant rebellion: the case of Romania in 1907." *American Sociological Review* 40:428-44.
- Coupland, Sir Reginald
1954 *Welsh and Scottish Nationalism*. London: Collins.
- Cox, Kevin
1970 "Geography, social contexts, and voting behavior in Wales, 1861-1951." Pp. 117-59 in Erik Allardt and Stein Rokkan (eds.), *Mass Politics*. New York: Free Press.
- Deutsch, Karl
1953 *Nationalism and Social Communication*. Cambridge, Ma.: M.I.T. Press.
- Evans, E. W.
1961 *The Miners of South Wales*. Cardiff: University of Wales Press.
- Evans, Gwynfor
1973 *Wales Can Win*. Llandybie, Wales: Christopher Davies.
- Geertz, Clifford
1963 "The integrative revolution: primordial sentiments and civic politics in the new states." Pp. 105-57 in C. Geertz (ed.), *Old Societies and New States*. New York: Free Press.
- Gellner, Ernest
1969 *Thought and Change*. Chicago: University of Chicago Press.
- Glejser, H.
1969 "A new test for heteroskedasticity." *Journal of the American Statistical Society* 64:316-23.
- Great Britain Central Statistical Office
1975 *Regional Statistics*. No. 11. London: Her Majesty's Stationery Office.
- Great Britain Office of Population Censuses and Surveys
1971 *Census of Wales, Summary Tables*. London: Her Majesty's Stationery Office.
- Hannan, Michael
1979 "The dynamics of ethnic boundaries in modern states." In Michael Hannan and John Meyer (eds.), *National Development and the World System: Educational, Economic and Political Change, 1950-1970*. Chicago: University of Chicago Press. In press.
- Hannan, Michael and Alice Young
1977 "Estimations in panel models: results on pooling cross-sections and time series." Pp. 52-83 in D. Heise (ed.), *Sociological Methodology 1977*. San Francisco: Jossey-Bass.
- Hanushek, Eric and John Jackson
1977 *Statistical Methods for Social Scientists*. New York: Academic Press.
- Hechter, Michael
1975 *Internal Colonialism: The Celtic Fringe in British National Development, 1536-1966*. London: Routledge and Kegan Paul.
- Kinnear, Michael
1968 *The British Voter*. New York: Cornell University Press.
- Lipset, Seymour and Stein Rokkan
1967 *Party Systems and Voter Alignments*. New York: Free Press.
- Madgwick, Peter J., Non Griffiths and Valerie Walker
1973 *The Politics of Rural Wales*. London: Hutchinson.
- Marx, Karl
[1852] *The Eighteenth Brumaire of Louis Bonaparte*. New York: International Publishing.
- Marx, Karl and Friedrich Engels
[1848] *The Communist Manifesto*. Baltimore: Penguin Books.
- Morgan, Kenneth O.
1970 *Wales in British Politics, 1868-1922*. Cardiff: University of Wales Press.
- Nairn, Tom
1977 "The twilight of the British state." *New Left Review* 101-2:3-61.
- Nielsen, François
1977 *Linguistic Conflict in Belgium: An Ecological Approach*. Ph.D. dissertation, Department of Sociology, Stanford University.
- 1978a "The Flemish movement in Belgium after World War II: a dynamic analysis." Unpublished paper. University of Chicago.
- 1978b "A population ecology model of collective action." Paper read at the meeting of the Southern Sociological Society, New Orleans.
- Parsons, Talcott
1975 "Some theoretical considerations on the nature and trends of change of ethnicity."

- Pp. 56-71 in Nathan Glazer and Daniel P. Moynihan (eds.), *Ethnicity: Theory and Experience*. Cambridge, Ma.: Harvard University Press.
- Philip, Alan B.
1975 *The Welsh Question: Nationalism in Welsh Politics, 1945-1970*. Cardiff: University of Wales Press.
- Ragin, Charles
1977 "Class, status and 'reactive ethnic cleavages': the social bases of political regionalism." *American Sociological Review* 42:438-50.
- Ragin, Charles and Ted Davies
1978 "Industrialization and ethnicity in Wales: a direct test of the theory of reactive ethnic cleavages." Paper read at the meeting of Southern Sociological Society, New Orleans.
- Said, Abdul and Luis Simmons
1976 *Ethnicity in an International Context*. New Brunswick: Transaction Press.
- Smith, Anthony D.
1971 *Theories of Nationalism*. New York: Harper and Row.
- Southwood, Kenneth
1978 "Substantive theory and statistical interaction: five models." *American Journal of Sociology* 83:1154-203.
- Stokes, Donald
1968 "Parties and the nationalization of electoral forces." Pp. 182-202 in W. N. Chambers and W. D. Burnham (eds.), *The American Party System*. New York: Oxford University Press.
- Thomas, Brirley
1962 *The Welsh Economy: Studies in Expansion*. Cardiff: University of Wales Press.
- Van den Berghe, Pierre
1967 *Race and Racism: A Comparative Perspective*. New York: Wiley.
- Weber, Max
1947 *The Theory of Social and Economic Organization*. New York: Oxford University Press.
- Williams, David
1950 *A History of Modern Wales*. London: Murray.
- Williams, Glamor
1971 "Language, literacy and nationality in Wales." *History* 56:1-16.

SOCIAL LEARNING AND DEVIANT BEHAVIOR: A SPECIFIC TEST OF A GENERAL THEORY*

RONALD L. AKERS, MARVIN D. KROHN, LONN LANZA-KADUCE,
AND MARCIA RADOSEVICH

University of Iowa

American Sociological Review 1979, Vol. 44 (August):636-655

A social learning theory of deviant behavior is tested with survey data on adolescent drinking and drug behavior. The theory is strongly supported. The major explanatory variables from that theory, *differential association*, *differential reinforcement*, *definitions*, and *imitation* combine to account for 68% of the variance in marijuana use (29% of abuse) and 55% of the variance in alcohol use (32% of abuse) by adolescents. The study demonstrates that central learning concepts are amenable to questionnaire measurement, and the findings indicate that social learning theory will do well when tested with other forms of deviant behavior.

INTRODUCTION

In the last decade we have seen a dramatic shift away from sociological explanations of deviant behavior toward developing theoretical perspectives on societal reactions to and definitions of deviance and crime. Labelling and conflict formulations have become major foci of sociological theorizing as well as the sounding boards for most of the controversy and discourse in the field of deviance. This shift in focus was deemed necessary to redress the previous imbalance of attention to the deviant behavior itself (Akers, 1968), and it clearly has had that effect. Unfortunately, it also has led to the neglect of theoretical developments in the etiology of deviant behavior. Neither labelling nor conflict perspectives has offered a general explanation of de-

viant behavior, although some conflict theorists have offered preliminary but incomplete efforts in that direction (Taylor, et al., 1973; Spitzer, 1975). There have been other efforts directed toward explaining deviant behavior, but these have been fairly narrow in scope; they have usually been limited either to a specific type of deviant behavior or to a restricted range of substantive variables. For example, a good deal of attention has been paid to the modern resurrection of deterrence theory (Gibbs, 1975; 1977; Waldo and Chiricos, 1972; Tittle, 1975; Silberman, 1976; Erickson et al., 1977; Meier and Johnson, 1977; Geerken and Gove, 1977). The scope of deterrence theory has been changed little, however, since its statement by the classical criminologists two centuries ago and is limited to the actual or perceived certainty, severity, and celerity of formally administered legal sanctions for violations of the criminal law. Another example is Travis Hirschi's (1969) control (social bonding) theory which is a more general explanation of deviance than deterrence theory, but which is, in turn, primarily restricted to informal social control which comes from individuals being bonded to groups and institutions.

The most notable exception to the diminished attention to general explanations of deviant behavior is a form of social learning theory developed first by Robert

* Direct all communications to: Ronald L. Akers; Department of Sociology; University of Iowa; Iowa City, IA 52242.

The research was conducted while the authors were on the research staff of The Boys Town Center for the Study of Youth Development (Boys Town, Neb.). We gratefully acknowledge the support of the Center and express our appreciation to its director, Dr. Ronald Feldman and his computer, library, and administrative staff for their fine cooperation. We especially thank Matthew Lambert for the fine job he did for us on the project. Appreciation is expressed to the school officials, teachers, and students who cooperated in the survey. We are also appreciative of the parents who agreed to have their sons and daughters take part.

L. Burgess and Ronald L. Akers as differential association-reinforcement theory (Burgess and Akers, 1966; Akers et al., 1968) and elaborated on later by Akers (1973; 1977). As the name which Burgess and Akers originally chose to apply to this theoretical perspective makes clear, it was constructed as a revision of Edwin H. Sutherland's differential association theory (Sutherland, 1947; Sutherland and Cressey, 1974) in terms of general behavioral reinforcement theory (Skinner, 1953; 1959; Bandura and Walters, 1963; Bandura, 1969; 1977; Staats, 1975).¹ Social learning theory as a general perspective in deviance is part of a larger move toward incorporation of modern behaviorism into sociological theory (Homans, 1961; Burgess and Bushell, 1969; Kunkel, 1975; Hamblin et al., 1971; Emerson, 1969; 1972; Kunkel and Nagasawa, 1973; Burgess and Nielsen, 1974; Chadwick-Jones, 1976; for reviews of the relevance of behavioral theory for sociology see Friedrichs, 1974; Tarter, 1973). As such it is a theoretical perspective which is compatible with the more specific forays into the explanation of deviant behavior. Indeed, the major features of such theories as deterrence and control theories (Hirschi, 1969) can be subsumed under the principles of social learning theory (Akers, 1977; Conger, 1976; 1977; Feldman, 1977). However, all too often the relevance for social learning theory of some of the deviance research has been ignored or unrecognized even when the authors employ central learning concepts such as reinforcement (Harris, 1975; 1977; Eaton, 1974; Meier and Johnson, 1977; Hirschi and Hindelang, 1977). This inattention is regrettable for, while other theories delineate the structural variables (class, race, anomic conditions, breakdown in social control, etc.) that yield differential

rates of deviance, social learning stresses the behavioral mechanisms by which these variables produce the behavior comprising the rates. As such, social learning is complementary to other sociological theories and could be used to integrate extant formulations to achieve more comprehensive explanations of deviance (in this regard see Akers, 1977:63-8).

The basic learning principles on which this theory is based have received empirical support under laboratory and applied experimental conditions (see Skinner, 1953; Honig, 1966; Ullmann and Krasner, 1969; Bandura, 1969; 1977; McLaughlin, 1971; Staats, 1975). Also, prior research has been supportive of differential association theory (J. Ball, 1957; Short, 1957; Voss, 1964; R. Ball, 1968; Krohn, 1974; Jensen, 1972; Burkett and Jensen, 1975). However, there has been little direct research on learning principles as applied to deviant behavior in natural settings. Akers (1977) has organized a large body of existing research and theory on a wide range of deviant behavior supportive of or consistent with social learning, but his effort is a post hoc application of theoretical principles for he does not present research designed explicitly to test propositions from the theory (in this regard see also Feldman, 1977). The results of other studies are consistent with Akers's social learning approach (Jessor and Jessor, 1975; Thomas et al., 1975), and a couple of studies explicitly testing social learning using secondary data analysis have found support for it (Anderson, 1973; Conger, 1976). However, more crucial and conclusive tests await collecting the relevant primary data in the community. The present study does that. Our purpose here is to report a specific test of social learning theory using standard sociological techniques of data collection and data analysis.

¹ The label *social learning* has been applied to other theories based on reinforcement principles but the Burgess and Akers formulation is the first and only one which ties general learning theory to a long-standing sociological theory and is directed towards specific forms of deviant behavior (crime, delinquency, drug addiction, suicide, etc.). It is to this theory that social learning usually refers when used here. It will be clear from the context when this is not the case.

STATEMENT OF SOCIAL LEARNING THEORY

The social learning theory tested here is summarized from Akers (1977:39-68). The primary learning mechanism in social behavior is operant (instrumental) conditioning in which behavior is shaped

by the stimuli which follow, or are consequences of the behavior. Social behavior is acquired both through direct conditioning and through *imitation* or modelling of others' behavior. Behavior is strengthened through reward (positive reinforcement) and avoidance of punishment (negative reinforcement) or weakened by aversive stimuli (positive punishment) and loss of reward (negative punishment). Whether deviant or conforming behavior is acquired and persists depends on past and present rewards or punishments for the behavior and the rewards and punishments attached to alternative behavior—*differential reinforcement*. In addition, people learn in interaction with significant groups in their lives evaluative *definitions* (norms, attitudes, orientations) of the behavior as good or bad. These definitions are themselves verbal and cognitive behavior which can be directly reinforced and also act as cue (discriminative) stimuli for other behavior. The more individuals define the behavior as good (positive definition) or at least justified (neutralizing definition) rather than as undesirable (negative definition), the more likely they are to engage in it.

The reinforcers can be nonsocial (as in the direct physiological effects of drugs) as well as social, but the theory posits that the principal behavioral effects come from interaction in or under the influence of those *groups which control individuals' major sources of reinforcement and punishment and expose them to behavioral models and normative definitions*. The most important of these groups with which one is in *differential association* are the *peer-friendship* groups and the *family* but they also include schools, churches, and other groups. Behavior (whether deviant or conforming) results from greater reinforcement, on balance, over punishing contingencies for the same behavior and the reinforcing-punishing contingencies on alternative behavior. The definitions are conducive to deviant behavior when, on balance, the positive and neutralizing definitions of the behavior offset negative definitions of it. Therefore, deviant behavior can be expected to the extent that it has been differ-

entially reinforced over alternative behavior (conforming or other deviant behavior) and is defined as desirable or justified. Progression into more frequent or sustained use and into abuse is also determined by the extent to which a given pattern is sustained by the combination of the reinforcing effects of the substance with social reinforcement, exposure to models, definitions through association with using peers, and by the degree to which it is not deterred through bad effects of the substance and/or the negative sanctions from peers, parents, and the law.

The social learning theory proposes a process which orders and specifies the interrelationships among these variables. Differential association, which refers to interaction and identity with different groups, occurs first. These groups provide the social environments in which exposure to definitions, imitation of models, and social reinforcement for use of or abstinence from any particular substance take place. The definitions are learned through imitation, and social reinforcement of them by members of the groups with whom one is associated, and once learned, these definitions serve as discriminative stimuli for use or abstinence. The definitions in interaction with imitation of using or abstinent models and the anticipated balance of reinforcement produces the initial use or continued abstinence. After the initial use, imitation becomes less important while the effects of definitions should continue (themselves affected by the experience of use). It is at this point in the process that the actual consequences (social and nonsocial reinforcers and punishers) of the specific behavior come into play to determine the probability that use will be continued and at what level. These consequences include the actual effects of the substance at first and subsequent use (the perception of which may, of course, be modified by what effects the person has previously learned to expect) and the actual reactions of others present at the time or who find out about it later, as well as the anticipated reactions of others not present or knowing about the use.

From this depiction of them as aspects

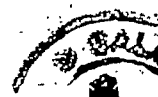
of the same learning process, we expect the independent variables to be positively interrelated, and we examine the zero-order relationships among them. Nonetheless, the major variables are conceptually distinct and our measures are empirically distinct enough that we do not expect their interrelationships to preclude separate independent effects. Thus, we also empirically order the independent variables in terms of how much variance is explained in the dependent variables. We test the general hypothesis from the theory that adolescent marijuana and alcohol use and abuse are related to each of the major sets of variables and to all of them combined.

Specifically, we expect that for both alcohol and drugs, the probability of abstinence decreases and the frequency of use increases when there is greater exposure to using rather than to abstinent models, when there is more association with using than with abstinent peers and adults, when use is differentially reinforced (more rewards, fewer punishers) over abstinence, and when there are more positive or neutralizing than negative definitions of use. Similarly, among users the probability of abuse increases with more exposure to abusing rather than moderate or abstinent models, more association with high frequency users or abusers, greater differential reinforcement for abuse over more moderate use, and with more positive and neutralizing rather than negative definitions of use.

RESEARCH ON ADOLESCENT DRUG AND ALCOHOL BEHAVIOR

Adolescent drug and drinking behavior is a particularly strategic area for the current effort for two reasons. First, the area is characterized by the narrow scope of current theories of deviant behavior outlined above. The research has been largely restricted to the prevalence and sociodemographic and social-psychological correlates of teenage drinking and drug use (Abelson et al., 1973; Johnston, 1973; Block et al., 1974; National Commission on Marijuana and Drug Abuse, 1972; Drug Abuse Council, 1975; Rachal et al., 1975; O'Donnell et al.,

1976). Little has been done to develop and test explanations of the behavior drawn from general theories. (For a full and comprehensive review of the theory and research literature on adolescent drinking and drug use, see Radosevich et al., forthcoming.) One notable exception to this is the work of the Jessors (Jessor et al., 1968; 1970; 1973; Jessor and Jessor, 1975; 1977; Jessor, 1976) who have built a social-psychological theory of "problem behavior" (deviance) which incorporates part of Rotter's (1954) learning theory (locus of control) and other personality and social variables. Their theory, which is also a version of social learning, consists of three categories of variables—personality, social, and behavioral. Their findings tend to support parts (primarily the social component) of the theory. The Jessors' findings point to the second reason why adolescent drug use and drinking promises to be a fruitful area in which to examine social learning theory; that is, the research on social psychological correlates of drug use and drinking lends support to the relevance of many of the variables in the social learning theory tested here. For instance, research consistently finds that those holding tolerant or positive attitudes toward a substance are much more likely to use it than those holding negative attitudes toward it (Fejer and Smart, 1973; Johnston, 1973; Jessor et al., 1973; Calhoun, 1974; Kendall, 1976). Also, peer and parental influence have been found to be important variables in teenage drug and drinking behavior. Users are more likely than abstainers to associate with peers who are also users and this relationship remains whether friends' use is measured by or independently of the individual's perception of friends' use. (For a review of this research on parental and peer influences see Akers, 1977; recent studies to see are Pearce and Garrett, 1970; Kandel, 1973; 1974; Jessor et al., 1972; O'Donnell et al., 1976; Tec, 1974a; 1974b; Krohr, 1974; Wechsler and Thum, 1973; Kendall, 1976; Lawrence and Velleman, 1974.) Further, the research findings seem to be consistent with the causal ordering of these variables proposed by social learning: the youngster associates with peers who are users, learns defini-



tions favorable to use of the substance, and then uses (Jessor et al., 1973; Krohn, 1974).

METHODOLOGY

Sample and Procedure

Data were collected by administering a self-report questionnaire to 3,065 male and female adolescents attending grades 7 through 12 in seven communities in three midwestern states. A two-stage sample design was followed. First, we selected schools from within each participating school district which were representative in terms of school size and location within the district. In smaller districts this meant selecting all or most of the junior and senior high schools in the district. Secondly, we sampled two to three classrooms (depending on school and average class size) per grade level from among the required or general enrollment classes. Thus, although classrooms were sampled, each student has an approximately equal chance of being included in the sample.² The questionnaire (which

was pretested in a district not included in the final sample) was administered to all students in attendance in the selected classes on the day of the survey who had obtained written parental permission. The attrition from this parental permission procedure combined with absenteeism on the day of the survey was not great and 67% of the total number of students enrolled (95% of those with parental permission) in the sampled classes completed the questionnaire.³

A small subsample, purposively sampled from among respondents who volunteered in five of the seven districts ($n=106$, approximately 5% of the sample in these districts), was interviewed two to eight weeks after the administration of the questionnaire. The follow-up interview was intended to serve as a reliability and partial validity check on the questionnaire responses and to provide additional descriptive information. The interviews were conducted individually in private rooms at school during school hours.

Reliability and Validity

Prior research has consistently shown that the self-report questionnaire technique is reliable and valid in measuring adolescent delinquent, drug, and drinking behavior (Hardt and Peterson-Hardt, 1977; Groves, 1974; Block et al., 1974; Single et al., 1975; Whitehead and Smart, 1972). Our own checks in the present research confirm this. Internal consistency on interlocking questions was high

² Our primary aim was to test an explanation of drug and drinking behavior and we had no plans to generalize about the prevalence or sociodemographic variations to a wider national or regional population. Therefore, there was no attempt to get a probability sample or to insure that the total sample was regionally or nationally representative. We did plan to report findings to the participating school districts and to generalize findings within each district. Also, we wanted to follow a design which would require the involvement of as few schools and school personnel as possible, which would minimize adjustments needed in the school routine, and which would facilitate administration of the questionnaire to groups of respondents. The sampling of a limited number of classrooms from within each selected school best served these purposes. We believe that being alert to the problem of minimizing interference of the survey into the school routine and proposing the sampling procedure which we followed was a significant element in gaining the approval and cooperation of the school officials. The resultant sample was sufficiently representative within each district that we could make reasonable generalizations about the drug and drinking problem in the district. Whether two or three classes per grade level were sampled from each school depended on the size of the classes. We tried to include enough classes to secure responses from at least 10% of the total school enrollment or a minimum of 100 respondents per school, whichever was greater, to help protect the confidentiality of respondents in the smaller schools.

³ Overall, 74% of the parental permission forms distributed were returned (the lowest percentage of return in a district was 62% and the highest return rate was 93%). The forms were first distributed by the researchers in the classrooms one week before the survey; then, one more visit was made to the classrooms to remind students to return the forms. For some classes, telephone calls were made to the parents of those students who had not returned the form. Without this call-back procedure, buttressed by telephone calls, the return rate would have been smaller. For the sample as a whole, 95% of those returning forms were granted parental permission to take part in the survey (we asked that the forms be returned whether permission was granted or denied). Ninety-five percent of those attended class and completed the questionnaire on the day of the survey.

(Gammas=.91 and higher). In addition, a comparison of the responses to the frequency and quantity of use questions on the questionnaire with responses to the same items given at the time of the interview demonstrated a high degree of reliability (Gammas=.89 and higher). Without exception the interview respondents reported that they believed the researchers' assurances of confidentiality and that no one but the researchers would have access to identifiable answers; thus, all said that they felt secure in responding and answered questions both on the questionnaire and in the interview honestly.⁴

⁴ Careful steps were taken to protect the rights of both questionnaire and interview respondents and of the school districts. The usual university procedures were followed regarding approval of the project's procedures for protection of the rights of research participants. At the time of the first visit to the classrooms, the students were informed of the survey and each one present was given an envelope containing a letter explaining the purpose and content of the study to the parents and the parental consent form mentioned in fn. 3. The students were told that participation in the study was completely voluntary. It was made clear that no student had to participate as a condition for class credit or any other school requirement and that approval of the study by the district and school officials in no way made participation mandatory. All of the responses were and are held in strictest confidence. In five of the districts, respondents who were willing to be interviewed later were asked to indicate that willingness and to sign their questionnaires. Also, it was possible for anyone to place his or her name on the questionnaire even if not volunteering for an interview (and many did just that). To protect the confidentiality of those volunteering for an interview, all respondents, whether signing the name sheet or not, separated it from the rest of the questionnaire and deposited it in a separate box from the one in which the completed questionnaires were deposited. Only the research staff had and has access to the name lists which, when not in a locked drawer, were kept in a bank safety deposit box. All other respondents in these districts and all respondents in the other two districts where no interviews were conducted were anonymous. At the interview each respondent was again informed of the confidentiality of the information given. Upon completion of the interview, each respondent was paid the previously stipulated amount of \$2.50 and signed a sheet acknowledging the voluntary nature of the interview and receipt of the payment. The list of interviewee's names was treated in the same way as the name sheets mentioned above. We also protected the identification of the school districts participating in the study. No community, school district, or school has been or will be identified by name in reports or disseminated findings.

Measurement of Variables

Dependent variables. Abstinence-use of alcohol and marijuana is measured by a six-point frequency-of-use scale ranging from nearly every day to never. A quantity frequency (Q-F) scale was also computed but since there is a near perfect correlation between the Q-F scale and the frequency-of-use scale, the analysis here includes only the latter measure.⁵

Abuse among users is measured by combining responses to the frequency questions with responses to a question asking the respondents to check whether or not they had experienced on more than one occasion any of a list of problems while or soon after using alcohol or marijuana.⁶ This combination produced a four-point abuse scale ranging from heavy abuse to no abuse.

Independent variables. From the summary of social learning theory presented above it can be seen that the main concepts to be measured are *imitation*, *differential association*, *definitions*, and *differential reinforcement*. For the present analysis, we distinguish between differential reinforcement comprised of social reinforcement combined with non-social reinforcement (experienced or anticipated drug or alcohol effects) and that comprised only of social reinforcement. Each of the resulting five concepts are operationalized by a set of items measuring different aspects of each concept. (The Appendix provides a brief description of the way the five concepts are measured.)

⁵ Alcohol use was measured by responses to separate questions on beer, wine, and liquor. The highest percentage of use and most frequent use was reported for beer, and since there is a very high correlation between use of the three forms of alcohol, use of alcohol in this analysis is measured only by reported frequency of use of beer.

⁶ The problems included "had an accident," "couldn't remember later what I had done," "used more than I had planned." This is a fairly standard use of "problems associated with" as a nonclinical measure of abuse of some substance. It should not be confused with our measures of positive and negative consequences of use for the differential reinforcement variables. The questions used to measure abuse were asked separately from and never combined with the questions used to measure differential reinforcement.

These five clusters of variables (a total of 15 variables in the abstinence-use analysis and 16 variables in the abuse analysis) constitute the independent variables in this analysis.⁷

Method of analysis. Although most of the measures yield ordinal-level data, we will use multiple regression techniques. It has been demonstrated that regression can be confidently employed with ordinal data without introducing bias in the results (Labovitz, 1970; 1971; Kim, 1975). The use of regression techniques provides an overall summary of the explanatory power of the model while also allowing us to examine the unique effects of the five subsets of variables and of each separate variable.

PRESENTATION OF FINDINGS

Explaining Abstinence-Frequency of Use

The zero-order correlation matrices for the alcohol and marijuana use variables are presented in Tables 1 and 2.⁸ As expected, most of the independent variables

are related in a positive direction with variability in the strength of the relationships. Of particular interest are the relatively weak relationships of the deterrence items to the other variables, especially within the matrix on alcohol behavior. Also, note the strength of the relationships of both alcohol and marijuana use to those variables of associations with and attitudes of peers, to reinforcement balance, and to reward-costs of use, and note the interrelationships among these variables. These zero-order relationships anticipate our findings in the multivariate analysis to which we now turn.

The results of the regression analyses show strong support for the social learning theory of adolescent alcohol and drug behavior.⁹ When all the independent variables are incorporated into the full regression equation, the model explains 55% of the variance in drinking behavior (abstinence-frequency of use; Table 3) and 68% of the variance in marijuana behavior (abstinence-frequency of use; Table 4).¹⁰

The power of the full model including the five subsets of variables, therefore, is demonstrated. But, we are also interested in determining the relative predictive values of the subsets and single variables to see if each part of the theory is supported. We do this in two ways. First, we regress the dependent variables on all variables and each subset of variables in separate regression equations. This provides a partial regression coefficient for each variable in each equation and estimates of the total amount of variance explained by each subset (Tables 3 and 4). Second, we compute the proportion of variance which the remaining subsets ex-

⁷ The concepts are clearly not equal in the scope of concrete empirical phenomena to which each refers. Differential association with family, peer, and other groups exposes the adolescent to using and nonusing models and normative definitions of use. It is in interaction in these groups in which the reactions of others differentially reinforce substance use or abstinent behavior. It is in this sense, then, that the differential association could include empirical referents of each of the other concepts and a general measure of differential association (in addition to being a measure of with whom one interacts), could serve as a general, albeit indirect, index of the combined effects of social reinforcement, imitation, and exposure to normative definitions. But such an index could not distinguish among the specific mechanisms of taking on definitions, imitating, and reinforcing of behavior which occur within the groups with which one is differentially associated. The combined social/nonsocial reinforcement subset obviously includes a wider array of concrete reinforcers than the subset of only social reinforcers. But, while reinforcement is the most abstract concept, the concrete set of events to which our measures here refer makes neither the social/nonsocial reinforcement, nor the social reinforcement subset broader than the definitions subset. Since it refers specifically to observing the behavior of someone else without reference to attitudes toward or consequences of the behavior, the imitation subset represents the most limited range of phenomena.

⁸ The zero-order matrices for the abuse variables not presented here are similar to those for use.

⁹ The total N in the tables varies because of attrition due to listwise deletion of missing values. The respondents who were eliminated were not significantly different from those included on sociodemographic characteristics and on the dependent variable. We also computed the regression analysis employing pairwise deletion and obtained similar results.

¹⁰ This general level of explained variance and the relationships of the separate independent variables to the dependent variables held when we controlled for such variables as SES and sex (which were not related to the dependent variables) and when we controlled for such variables as grade in school and type of school district (which were related to the dependent variables).

Table 1. Zero-Order Correlation Matrix for Variables Included in Alcohol Use Analysis (N = 2,414)*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Imitation	1.00															
2. Techniques of Neutralization	.05	1.00														
3. Law abiding/violating definitions	.11	.40	1.00													
4. Positive/negative definitions	.19	.39	.39	1.00												
5. Adult norm qualities	.18	.08	.14	.35	1.00											
6. Peer norm qualities	.17	.32	.33	.58	.29	1.00										
7. Differential peer association	.22	.32	.44	.49	.18	.48	1.00									
8. Praise for not using	.09	.19	.22	.24	.16	.24	.29	1.00								
9. Friends' reaction	.16	.32	.32	.41	.17	.45	.46	.26	1.00							
10. Parents' reaction	.14	.11	.11	.29	.33	.19	.27	.24	.26	1.00						
11. Informal deterrence	.03	.19	.18	.19	-.01	.16	.17	.12	.18	.02	1.00					
12. Formal deterrence	.02	.07	.12	.09	.01	.08	.06	.10	.12	-.005	.43	1.00				
13. Interference with activities	.05	.20	.24	.24	.07	.19	.23	.14	.18	.10	.19	.14	1.00			
14. Rewards—costs of use	.14	.30	.31	.48	.18	.36	.42	.23	.41	.23	.21	.11	.23	1.00		
15. Reinforcement balance	.15	.36	.39	.47	.18	.37	.46	.21	.38	.23	.20	.09	.27	.44	1.00	
16. Alcohol use	.16	.34	.47	.52	.20	.40	.68	.28	.40	.29	.13	.04	.21	.44	.46	1.00

* In this and in all subsequent tables independent variables have been coded such that positive coefficients indicate the theoretically expected direction.

plain when each subset in turn is eliminated from the equation. By subtracting each of these values from the proportion of variance explained by the full equation, we have a measure of how much explained variance is lost when a given subset of variables is eliminated. The larger the proportion of explained variance lost (or the smaller the explained variance remaining) when a subset is eliminated, the greater its relative explanatory power (Table 5). By analyzing the data in this fashion, we also circumvent potential problems of multicollinearity among the variables within each subset since our primary concern is with the relative explanatory power of the different subsets of variables and not with the relative power of individual variables within subsets.

With the exception of imitation, each

subset explains a substantial proportion of variance in both alcohol and marijuana use. The findings presented in Table 5 show that even when the most predictive subset of variables is eliminated the remaining variables are still able to explain 43% and 56% of the variance in alcohol and marijuana behavior, respectively. The fact that four of the five subsets of variables taken from social learning theory *each* explains a substantial proportion of the variance (and that the fifth is significantly related to the dependent variables in the expected direction) demonstrates that the theory as a whole is supported; its power is not dependent on any single component.

However, the analyses also plainly show that some subsets of variables specified by the theory are more impor-

Table 2. Zero-Order Correlation Matrix for Variables Included in Marijuana Use Analysis (N = 2,395)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Imitation	1.00															
2. Techniques of neutralization	.23	1.00														
3. Law abiding/violating definitions	.26	.23	1.00													
4. Positive/negative	.39	.45	.53	1.00												
5. Adult norm qualities	.15	.16	.19	.28	1.00											
6. Peer norm qualities	.32	.38	.38	.63	.28	1.00										
7. Differential peer association	.38	.41	.47	.71	.24	.59	1.00									
8. Praise for not using	.15	.25	.24	.32	.13	.30	.32	1.00								
9. Friends' reaction	.32	.37	.39	.55	.18	.52	.59	.29	1.00							
10. Parents' reaction	.12	.10	.13	.20	.18	.13	.18	.09	.18	1.00						
11. Informal deterrence	.18	.24	.28	.38	.08	.31	.35	.18	.32	.11	1.00					
12. Formal deterrence	.11	.18	.22	.22	.01	.17	.18	.12	.20	.10	.49	1.00				
13. Interference with activities	.19	.27	.28	.39	.13	.30	.35	.20	.28	.13	.24	.17	1.00			
14. Rewards—costs of use	.33	.40	.43	.67	.17	.51	.56	.29	.52	.16	.39	.24	.35	1.00		
15. Reinforcement balance	.31	.41	.44	.61	.19	.47	.53	.25	.46	.18	.32	.18	.38	.59	1.00	
16. Marijuana use	.38	.48	.40	.72	.24	.50	.79	.29	.50	.18	.31	.15	.36	.15	.52	1.00

tant than others. They are ranked in terms of relative effectiveness in explaining variance in alcohol and marijuana use as follows: (1) differential association, (2) definitions, (3) combined social/nonsocial differential reinforcement, (4) differential social reinforcement, and (5) imitation.¹¹ Not only does the differential association subset explain the highest proportion of variance, but the differential peer associa-

tion variable is the most important single variable. The definitions subset accounts for the second highest proportion of variance, and one's positive/negative definitions of the substances is the second most predictive single variable, while one's law-abiding/violating definitions rank third among the single variables. The differential reinforcements variables are next, followed by imitation variables which explain the least amount of variance in the dependent variables.

The fact of peer group influence on substance use comes as no surprise; it is documented by several previous studies. But, previous studies have not shown what the mechanisms are by which peer influence is exerted, and why, therefore, peer group association is so important. Our data show, as predicted by social learning theory, what these mechanisms are—friends provide social reinforcement

¹¹ It is possible that the relative explanatory power of each subset may be due in part to the different number of variables that are contained within each subset. To examine this possibility we selected the most predictive variable from each subset and entered those variables in a multiple regression equation. The result produced no change in the rank ordering of the concepts in either the alcohol or marijuana equation. This also allowed us to examine the possible effects of multicollinearity within subsets on the relative explanatory power of single variables. Again the results were similar to those obtained above, indicating small multicollinearity effects.

Table 3. Partial Regression Coefficients in Standard Form for Alcohol Use (N = 2,414)

Independent Variables	All Independent Variables	Imitation	Definitions	Differential Association	Differential Reinforcement: Social	Differential Reinforcement: Social/Non-social
1. Imitation	-.014	.161				
2. Techniques of neutralization	.040		.086			
3. Law abiding/violating definitions	.142		.288			
4. Positive/negative definitions	.160		.372			
5. Adult norm qualities	.002			.068		
6. Peer norm qualities	-.055			.071		
7. Differential peer association	.458			.629		
8. Praise for not using	.035				.141	
9. Friends' reaction	.008				.290	
10. Parents' reaction	.059				.168	
11. Informal deterrence	-.026				.060	
12. Formal deterrence	-.021				-.045	
13. Interference with activities	-.005				.119	
14. Rewards—costs of use	.067					.326
15. Reinforcement balance	.093					.301
R =	.738	.161	.598	.683	.483	.532
R ² =	.545	.026	.357	.466	.233	.283

Table 4. Partial Regression Coefficients in Standard Form for Marijuana Use (N = 2,395)

Independent Variables	All Independent Variables	Imitation	Definitions	Differential Association	Differential Reinforcement: Social	Differential Reinforcement: Social/Nonsocial
1. Imitation	.033	.378	.070			
2. Techniques of neutralization	.016					
3. Law abiding/violating definitions	.054		.123			
4. Positive/negative definitions	.257		.619			
5. Adult norm qualities	.018			.057		
6. Peer norm qualities	-.080			.038		
7. Differential peer association	.550			.751		
8. Praise for not using	.001				.118	
9. Friends' reaction	-.016				.366	
10. Parents' reaction	.006				.063	
11. Informal deterrence	.007				.139	
12. Formal deterrence	-.035				-.044	
13. Interference with activities	.034				.196	.280
14. Rewards—costs of use	.016					.410
15. Reinforcement balance	.082					
R =	.826	.378	.728	.790	.579	.618
R ² =	.683	.143	.530	.625	.335	.382

Table 5. Results from Regression Analysis Alternately Eliminating Subsets from the Full Equations for Alcohol and Marijuana Use

Subset Eliminated	Alcohol Use (N = 2,414)		Marijuana Use (N = 2,395)	
	When Subset Is Eliminated		When Subset Is Eliminated	
	R ²	Loss of Explained	R ²	Loss of Explained
	Remaining =	Variance =	Remaining =	Variance =
Differential Association	.427	.118	.561	.122
Definitions	.510	.035	.657	.026
Imitation	.544	.001	.682	.001
Differential Reinforcement:				
Social	.539	.006	.681	.002
Differential Reinforcement:				
Social/Nonsocial	.535	.010	.679	.004
Full Equation R ² =	.545		.683	

or punishment for abstinence or use, provide normative definitions of use and abstinence, and, to a lesser extent, serve as admired models to imitate. This is indicated by the fact that these other variables, on their own, explain a substantial amount of the variance in marijuana and alcohol behavior when the effect of the differential peer association variable is removed. The fact that differential interaction explains more variance in the dependent variables than do the reinforcement, definitions, and imitation variables indicates that there may be additional variables at work in interaction beyond those identified by social learning theory, that there are additional effects of the mechanisms specified by our theory which are not captured by our measures of them, or that there are effects of other learning variables which we have not included (e.g., discriminative stimuli in the interaction setting in which reinforcement takes place).

Since social learning theory includes modelling as an important part of the process, the lower levels of variance explained by our imitation measures may seem surprising. However, the relatively weak effect of the imitation subset on our frequency of use and abuse measures was not unexpected. First, imitation refers to the narrowest empirical phenomenon among our measures (see footnote 7) and while, as we have noted, multicollinearity is not a severe problem, the interrelationships specified in the theory would indicate that removing imitation has less effect because its impact is still reflected to some extent in the remaining broader measures. Second, and more important,

as indicated in the process outlined in the statement of the theory above, imitation in social learning theory is considered to have its greatest effect in the first acquisition or initial stages of behavior while the associational, reinforcement, and definitional variables are more important in the maintenance of a behavioral pattern. We expect imitation to be more important in first starting to use than we find it to be in explaining frequency of use as analyzed here (but still probably not more important than definitional and reinforcement variables). The analysis here which employs frequency of using as the dependent variable militates against finding a large effect for imitation variables. We would expect imitation to be even less important in accounting for maintenance of abusive patterns of use.

It is evident that social learning theory has been shown to be a powerful explanation of whether youngsters abstain from or are users of alcohol and marijuana. As predicted by the theory, the adolescents in our sample use drugs or alcohol to the extent that the behavior has been differentially reinforced through association in primary groups and defined as more desirable than, or at least as justified as, refraining from use. The next step in testing the validity of this perspective will be to examine how well these same variables account for levels of abuse of alcohol and drugs.

Explaining Abusive Patterns of Use

The results of the analyses of alcohol and marijuana abuse among adolescents are presented in Tables 6, 7, and 8. For these analyses, only users are included.

Table 6. Partial Regression Coefficients in Standard Form for Alcohol Abuse (N = 1,764)

Independent Variables	All Independent Variables	Imitation	Definitions	Differential Association	Differential Reinforcement: Social	Differential Reinforcement: Social/Nonsocial
1. Imitation	.046	.128				
2. Techniques of neutralization	-.005		.007			
3. Law abiding/violating definitions	.094		.220			
4. Positive/negative definitions	.077		.200			
5. Adult norm qualities	.050			.065		
6. Peer norm qualities	-.010			.040		
7. Differential peer association	.351			.474		
8. Praise for not using	.025				.115	
9. Friends' reaction	.042				.123	
10. Parents' reaction	-.130				-.195	
11. Informal deterrence	-.030				.010	
12. Formal deterrence	-.014				-.041	
13. Interference with activities	.039				.057	.141
14. Rewards—costs of use	-.036					-.047
15. Reinforcement balance	.144					.315
16. Usual effects of alcohol						.366
R =	.561	.128	.334	.500	.261	.366
R ² =	.315	.016	.111	.250	.068	.134

Table 7. Partial Regression Coefficients in Standard Form for Marijuana Abuse (N = 948)

Independent Variables	All Independent Variables	Imitation	Definitions	Differential Association	Differential Reinforcement: Social	Differential Reinforcement: Social/Nonsocial
1. Imitation	.032	.098				
2. Techniques of neutralization	.036		.106			
3. Law abiding/violating definitions	.098		.182			
4. Positive/negative definitions	.090		.298			
5. Adult norm qualities	.000			.047		
6. Peer norm qualities	-.061			.030		
7. Differential peer association	.384			.533		
8. Praise for not using	-.004				.080	
9. Friends' reaction	.057				.198	
10. Parents' reaction	-.130				-.195	
11. Informal deterrence	-.010				.024	
12. Formal deterrence	-.040				-.067	
13. Interference with activities	.070				.701	.228
14. Rewards—costs of use	.064					-.022
15. Reinforcement balance	-.020					.260
16. Usual effects of marijuana	.130					
R =	.623	.098	.440	.556	.381	.393
R ² =	.389	.010	.194	.310	.146	.154

Table 8. Results from Regression Analysis Alternately Eliminating Subsets from the Full Equations for Alcohol and Marijuana Abuse

Subset Eliminated	Alcohol Abuse (N = ,764)		Marijuana Abuse (N = 948)	
	When Subset Is Eliminated		When Subset Is Eliminated	
	R ² Remaining =	Loss of Explained Variance =	R ² Remaining =	Loss of Explained Variance =
Differential Association	.222	.093	.296	.093
Definitions	.302	.013	.372	.017
Imitation	.313	.002	.388	.001
Differential Reinforcement: Social	.292	.023	.364	.025
Differential Reinforcement: Social/Nonsocial	.297	.018	.371	.018
Full Equation R ² =	.315		.389	

The results parallel those of the analyses of abstinence-frequency of use reported above. Both marijuana and alcohol abuse are strongly related to the social learning variables. The proportion of variance explained in use-abuse is well below the explained variance in abstinence-frequency of use but it is still substantial—32% and 39% of the variance in alcohol and marijuana abuse, respectively. The differential association subset again explains the greatest proportion of variance (Tables 6 and 7), but, even without the differential association variables, the other variables in the model do well in accounting for the variance (22% and 30%; Table 8).

The variables are not ordered in terms of relative effectiveness in predicting abuse in the same way they were ranked in explaining abstinence-use. In the analysis of abstinence-use, definitions were the second most effective subset, whereas this subset ranks fourth in accounting for use-abuse while the differential reinforcement variables are ranked higher. In substance abuse the user comes more and more to respond to direct reinforcement, especially from the drug effects themselves; definitions would be expected to play a less significant role. This is shown fairly clearly when we examine the effect of adding an alcohol and marijuana effects variable which was not included in the previous analysis of abstinence-frequency of use. This variable was measured by asking using respondents to report the effects which they usually obtained from smoking marijuana or

drinking alcohol.¹² This variable has the largest beta weight among the single variables making up the social/nonsocial differential reinforcement subset and ranks second for marijuana abuse and third for alcohol abuse among the entire set of single variables.

The variable of parental reaction appears to be related to abuse in the direction opposite to that found in the analysis of use. For the latter a lower probability of use is found for those reporting the strongest or harshest parental punishment while for the former a lower probability of abuse is found for those reporting lesser punishment or no parental response. A cross-tabular examination of these relationships reveals a curvilinear relationship between parental reaction and both adolescents' use and abuse of alcohol and marijuana. That is, higher frequency of use and abuse is found with parental response (actual or anticipated) at both the most lenient (encourage or do nothing) and the harshest end of the scale (take some drastic action such as kick the youngsters out of the house or turn them over to the police). The highest probability of abstinence and the lowest levels of use and abuse are found among adolescents who report that their parents have responded or would respond to their use with a moderate negative reaction such as

¹² Since abstainers could only report anticipated effects, the question of actual physical effects usually obtained from using the substances could not be included in the analyses of abstinence-frequency of use. Only among users are we able to differentiate between social and nonsocial reinforcement.

a scolding. Our post hoc interpretation of these relationships is that anticipated parental punishment is a deterrent to use and sustains abstinence. Even after use has begun a reasonable amount of parental punishment holds down the chances of increasing frequency of use or moving into abuse. However, once adolescents have gotten into heavy use or abuse, parental reaction has lost its effect and the increasing abuse of the substances by their children may produce ever harsher reactions by parents in increasingly desperate attempts to do something about it.

While not contradictory to the theory, neither the difference between the amount of variance explained in abstinence-frequency of use and that explained in use-abuse for both alcohol and marijuana behavior nor the difference between the amount of variance explained in alcohol behavior and the amount explained in marijuana behavior was specifically anticipated. The lower level of explained variance in substance abuse than in substance use may be due simply to the fact that the variance in the abuse variables is restricted, thereby producing attenuation in the total variance explained. The differences in the explained variances in alcohol and marijuana behavior may be an artifact of our measurements, may indicate that the stimuli surrounding alcohol behavior are more uniform than those surrounding marijuana behavior, or may point to some real difference in the ability of the theory to account for the two kinds of substance use.

SUMMARY AND CONCLUSIONS

In the past decade sociological attention in the study of deviance has shifted to explanations of the control system and away from the equally important task of proposing and testing general explanations of deviant behavior. We have presented a social learning perspective on deviant behavior developed during this same time period which holds promise as a general theory of the process of coming to engage in deviant acts but which had not been tested with primary data collected in the community and subjected to multivariate

analysis. We have tested it here on specific forms of adolescent deviance—drug and alcohol use and abuse.

The results of the tests support the theory. All of the dependent variables are strongly related to the social learning variables of differential association, definitions, differential reinforcement, and imitation. The most powerful of these independent variables is differential association. The other variables stand on their own, however, and explain substantial portions of variance even without the differential association measures (except for imitation which is the weakest of the variables for use and explains almost none of the variance in abuse).

The strength of empirical support for the theory suggests that the theory will have utility in explaining the use and abuse of other substances by adolescents. These findings also indicate that social learning theory will do well when tested with other forms of deviant behavior in future research. Future research could test the general theory in any number of specific contexts. We believe that our study demonstrates that the central learning concepts are amenable to meaningful questionnaire measurement and that social learning theory can be adequately tested with survey data. This is important given the lack of survey data measuring social learning concepts, and the collection and analysis of cross-sectional data presented here is a necessary step, but a first step, nonetheless. Therefore, the next steps in testing social learning theory not only should include analysis of the use and abuse of stronger and more severely disapproved substances than marijuana and alcohol (stimulants, depressants, psychedelics, and opiates), but also should include the collection of longitudinal data (Jessor and Jessor, 1977; Kandel, 1978). Longitudinal data will allow more adequate testing of the process of learning and temporal-ordering of variables in the theory.

REFERENCES

- Abelson, H. I., R. Cohen, D. Shryer, and M. Rapoport
1973 "Drug experience, attitudes and related be-

- havior among adolescents and adults." Pp. 488-867 in *Drug Use in America: Problem in Perspective*, Vol. 1. Report prepared by the National Commission on Marijuana and Drug Abuse.
- Akers, Ronald L.
 1968 "Problems in the sociology of deviance: social definitions and behavior." *Social Forces* 46:455-65.
 1973 *Deviant Behavior: A Social Learning Approach*. Belmont: Wadsworth.
 1977 *Deviant Behavior: A Social Learning Approach*. 2nd ed. Belmont: Wadsworth.
- Akers, Ronald L., Robert L. Burgess and Weldon Johnson
 1968 "Opiate use, addiction, and relapse." *Social Problems* 15:459-69.
- Anderson, Linda S.
 1973 "The impact of formal and informal sanctions on marijuana use: a test of social learning and deterrence." Master's thesis: Florida State University.
- Ball, John C.
 1957 "Delinquent and non-delinquent attitudes toward the prevalence of stealing." *Journal of Criminal Law, Criminology and Police Science* 48:259-74.
- Ball, Richard A.
 1968 "An empirical exploration of neutralization theory." Pp. 255-65 in Mark Leffton, James K. Skipper and Charles H. McCaghy (eds.), *Approaches to Deviance*. New York: Appleton-Century-Crofts.
- Bandura, Albert
 1969 *Principles of Behavior Modification*. New York: Holt, Rinehart and Winston.
 1977 *Social Learning Theory*. Englewood Cliffs: Prentice-Hall.
- Bandura, Albert and Richard H. Walters
 1963 *Social Learning and Personality Development*. New York: Holt, Rinehart and Winston.
- Block, J. R., N. Goodman, F. Ambellan and J. Revenson
 1974 "A self-administered high school study of drugs." Hempstead: Institute for Research and Evaluation.
- Burgess, Robert L. and Ronald L. Akers
 1966 "A differential association-reinforcement theory of criminal behavior." *Social Problems* 14:128-47.
- Burgess, Robert and Don Bushell (eds.)
 1969 *Behavioral Sociology*. New York: Columbia University Press.
- Burgess, Robert L. and Joyce McCarl Nielsen
 1974 "An experimental analysis of some structural determinants of equitable and inequitable exchange relations." *American Sociological Review* 39:427-43.
- Burkett, Steven and Eric L. Jensen
 1975 "Conventional ties, peer influence, and the fear of apprehension: a study of adolescent marijuana use." *Sociological Quarterly* 16:522-33.
- Calhoun, J. F.
 1974 "Attitudes toward the sale and use of drugs: a cross-sectional analysis of those who use drugs." *Journal of Youth and Adolescence* 3:31-47.
- Chadwick-Jones, J. K.
 1976 *Social Exchange Theory: Its Structure and Influence in Social Psychology*. New York: Academic Press.
- Conger, Rand D.
 1976 "Social control and social learning models of delinquent behavior—a synthesis." *Criminology* 14:17-40.
 1977 Rejoinder. *Criminology* 15:117-26.
- Drug Abuse Council, Inc.
 1975 *Students and Drugs: A Report of the Drug Abuse Council* (by Yankelovich, Skelly, and White, Inc.) Washington, D. C.: Drug Abuse Council.
- Eaton, William W.
 1974 "Mental hospitalization as a reinforcement process." *American Sociological Review* 39:252-60.
- Emerson, Richard M.
 1969 "Operant psychology and exchange theory." Pp. 379-405 in Robert L. Burgess and Don Bushell, Jr. (eds.), *Behavioral Sociology*. New York: Columbia University Press.
 1972 "Exchange theory." Pp. 38-87 in Joseph Berger, Morris Zelditch, Jr. and Bo Anderson (eds.), *Sociological Theories in Progress*, Vol. 2. Boston: Houghton-Mifflin.
- Erickson, Maynard L., Jack P. Gibbs and Gary F. Jensen
 1977 "The deterrence doctrine and the perceived certainty of legal punishment." *American Sociological Review* 42:305-17.
- Fejer, Dianne and Reginald G. Smart
 1973 "The knowledge about drugs, attitudes toward them and drug use rates of high school students." *Journal of Drug Education* 3:377-88.
- Feldman, M. P.
 1977 *Criminal Behavior: A Psychological Analysis*. London: Wiley.
- Friedrichs, Robert W.
 1974 "The potential impact of B. F. Skinner upon American sociology." *The American Sociologist* 9:3-8.
- Geerken, Michael and Walter R. Gove
 1977 "Deterrence, overload, and incapacitation: an empirical evaluation." *Social Forces* 56:424-47.
- Gibbs, Jack P.
 1975 *Crime, Punishment and Deterrence*. New York: Elsevier.
 1977 "Social control, deterrence, and perspectives on social order." *Social Forces* 56:408-23.
- Groves, W. Eugene
 1974 "Patterns of college student use and lifestyles." Pp. 241-75 in Eric Josephson and Eleanor E. Carrol (eds.), *Drug Use: Epidemiological and Sociological Approaches*. New York: Wiley.
- Hamblin, Robert L., David Buckholdt, Daniel Feltor, Martin Kozloff and Lois Blackwell
 1971 *The Humanization Process: A Social Be-*

- havioral Analysis of Children's Problems. New York: Wiley.
- Hardt, Robert H. and Sandra Peterson-Hardt
1977 "On determining the quality of the delinquency self-report method." *Journal of Research in Crime and Delinquency* 14:247-61.
- Harris, Anthony R.
1975 "Imprisonment and the expected value of criminal choice: a specification and test of aspects of the labeling perspective." *American Sociological Review* 40:71-87.
1977 "Sex and theories of deviance: toward a functional theory of deviant type-scripts." *American Sociological Review* 42:3-16.
- Hirschi, Travis
1969 *Causes of Delinquency*. Berkeley and Los Angeles: University of California Press.
- Hirschi, Travis and Michael J. Hindelang
1977 "Intelligence and delinquency; a revisionist review." *American Sociological Review* 42:571-87.
- Homans, George C.
1961 *Social Behavior: Its Elementary Forms*. New York: Harcourt Brace Jovanovich.
- Honig, Werner
1966 *Operant Behavior: Areas of Research and Application*. New York: Appleton-Century-Crofts.
- Jensen, Gary F.
1972 "Parents, peers and delinquent action: a test of the differential association perspective." *American Journal of Sociology* 78:63-72.
- Jessor, Richard
1976 "Predicting time of onset of marijuana use: a developmental study of high school youth." *Journal of Consulting and Clinical Psychology* 44:125-34.
- Jessor, R., M. I. Collins and S. L. Jessor
1972 "On becoming a drinker: social-psychological aspects of an adolescent transition." *Annals of the New York Academy of Science* 197:199-213.
- Jessor, R., T. D. Graves, R. C. Hanson and S. L. Jessor
1968 *Society, Personality and Deviant Behavior: A Study of a Tri-Ethnic Community*. New York: Holt, Rinehart and Winston.
- Jessor, R. and S. L. Jessor
1975 "Adolescent development and the onset of drinking: a longitudinal study." *Journal of Studies on Alcohol* 36:27-51.
1977 *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. New York: Academic Press.
- Jessor, Richard, Shirley L. Jessor and John Finney
1973 "A social psychology of marijuana use: longitudinal studies of high school and college youth." *Journal of Personality and Social Psychology* 26:1-15.
- Jessor, R., H. B. Young, E. B. Young and G. Tesi
1970 "Perceived opportunity, alienation, and drinking behavior among Italian and American youth." *Journal of Personality and Social Psychology* 15:215-22.
- Johnston, L.
1973 *Drugs and American Youth*. Ann Arbor: Institute for Social Research.
- Kandel, Denise
1973 "Adolescent marijuana use: role of parents and peers." *Science* 181:1067-70.
1974 "Interpersonal influences on adolescent illegal drug use." Pp. 207-40 in Eric Josephson and Eleanor E. Carrol (eds.), *Drug Use: Epidemiological and Sociological Approaches*. New York: Wiley.
1978 *Longitudinal Research on Drug Use*. Ed. by D. Kandel. New York: Halsted.
- Kendall, Richard Fenwick
1976 *The Context and Implications of Drinking and Drug Use among High School and College Students*. Ph.D. dissertation, Department of Psychology, New York University.
- Kim, Jae-On
1975 "Multivariate analysis of ordinal variables." *American Journal of Sociology* 81:261-98.
- Krohn, Marvin D.
1974 "An investigation of the effect of parental and peer associations on marijuana use: an empirical test of differential association theory." Pp. 75-89 in Marc Reidel and Terrence P. Thornberry (eds.), *Crime and Delinquency: Dimensions of Deviance*. New York: Praeger.
- Kunkel, John H. and Richard H. Nagasawa
1973 "A behavioral model of man: propositions and implications." *American Sociological Review* 38:530-43.
- Kunkel, John R.
1975 *Behavior, Social Problems, and Change: a Social Learning Approach*. Englewood Cliffs: Prentice-Hall.
- Labovitz, Sanford
1970 "The assignment of numbers to rank order categories." *American Sociological Review* 35:515-24.
1971 "In defense of assigning numbers to ranks." *American Sociological Review* 36:521-22.
- Lawrence, T. S. and J. O. Velleman
1974 "Correlates of student drug use in a suburban high school." *Psychiatry* 37:129-36.
- McLaughlin, Barry
1971 *Learning and Social Behavior*. New York: Free Press.
- Meier, Robert F. and Weldon T. Johnson
1977 "Deterrence as social control: the legal and extralegal production of conformity." *American Sociological Review* 42:292-304.
- National Commission on Marijuana and Drug Abuse
1972 *Marijuana: A Signal of Misunderstanding*. New York: New American Library.
- O'Donnell, John, Harwin L. Voss, Richard R. Clayton, and Robin G. W. Room
1976 *Young Men and Drugs—A Nationwide Survey*. Rockville: National Institute on Drug Abuse.
- Pearce, J. and D. H. Garrett
1970 "A comparison of the drinking behavior of delinquent youth versus non-delinquent

- youth in the states of Idaho and Utah." *Journal of School Health* 40:131-5.
- Rachal, J. V., J. R. Williams, M. L. Brehm, B. Cavanaugh, R. P. Moore, and W. C. Eckerman
1975 Adolescent Drinking Behavior, Attitudes and Correlates. National Institute on Alcohol Abuse and Alcoholism: U. S. Department of Health, Education and Welfare, Contract No. HSM 42-73-80 (NIA).
- Radosevich, Marcia, Lonn Lanza-Kaducz, Ronald L. Akers and Marvin D. Krohn
Forth- "The sociology of adolescent drug and com- drinking behavior: a review of the state of ing the field: part 1,2." *Deviant Behavior: An Interdisciplinary Journal*.
- Rotter, Julian
1954 *Social Learning and Clinical Psychology*. Englewood Cliffs: Prentice-Hall.
- Short, James F.
1957 "Differential association and delinquency." *Social Problems* 4:233-9.
- Silberman, Matthew
1976 "Toward a theory of criminal deterrence." *American Sociological Review* 41:442-61.
- Single, Eric, Denise Kandel and Bruce D. Johnson
1975 "The reliability and validity of drug use responses in a large scale longitudinal survey." *Journal of Drug Issues* 5:425-43.
- Skinner, B. F.
1953 *Science and Human Behavior*. New York: Macmillan.
1959 *Cumulative Record*. New York: Appleton-Century-Crofts.
- Spitzer, Steven
1975 "Toward a Marxian theory of deviance." *Social Problems* 22:638-51.
- Staats, Arthur
1975 *Social Behaviorism*. Homewood: Dorsey Press.
- Sutherland, Edwin H.
1947 *Principles of Criminology*. 4th ed. Philadelphia: Lippincott.
- Sutherland, Edwin H. and Donald R. Cressey
1974 *Criminology*. 9th ed. Philadelphia: Lippincott.
- Tarter, Donald E.
1973 "Heeding Skinner's call: toward the development of a social technology." *The American Sociologist* 8:153-8.
- Taylor, Ian, Paul Walton and Jack Young
1973 *The New Criminology: for a Social Theory of Deviance*. New York: Harper and Row.
- Tec, Nechama
1974a *Grass Is Green in Suburbia: A Sociological Study of Adolescent Usage of Illicit Drugs*. Roslyn Heights: Libra.
1974b "Parent child drug abuse: generational continuity or adolescent deviancy?" *Adolescence* 9:351-64.
- Thomas, Charles W., David M. Petersen and Matthew T. Zingraff
1975 "Student drug use: a re-examination of the hang-loose ethic hypothesis." *Journal of Health and Social Behavior* 16:63-73.
- Tittle, Charles R.
1975 "Deterrents or labeling?" *Social Forces* 53:395-410.
- Ullmann, Leonard P. and Leonard Krasner
1963 *A Psychological Approach to Abnormal Behavior*. Englewood Cliffs: Prentice-Hall.
- Voss, Harwin
1964 "Differential association and reported delinquent behavior: a replication." *Social Problems* 12:78-85.
- Waldc, Gordon P. and Theodore Chiricos
1972 "Perceived penal sanction and self-reported criminality: a neglected approach to deterrence research." *Social Problems* 19:522-40.
- Wechsler, Henry and Denise Thum
1973 "Teenage drinking, drug use, and social correlates." *Quarterly Journal of Studies on Alcohol* 34:1220-7.
- Whitehead, P. C. and R. G. Smart
1972 "Validity and reliability of self-reported drug use." *Canadian Journal of Criminology and Corrections* 14:1-8.

APPENDIX

LIST OF SOCIAL LEARNING VARIABLES*

I. Imitation

1. *Index of Imitation*

Total of all the "admired" models (parents, friends, other adults, etc.) whom the respondent reports having observed using the substance.

II. Definitions Favorable or Unfavorable to Use

2. *Techniques of Neutralization Scale*

A scale of three items measuring Sykes and Matza's (1957) "techniques of neutralization" or definitions justifying or excusing use by "denial of injury," "denial of responsibility," or "condemning the condemners." Item to scale interrelation for the scale referring to alcohol range from .68 to .76; for marijuana the range is from .68 to .78.

3. *Scale of Law-Abiding or Law-Violating Definitions*

A scale of items measuring obedient or violating attitudes toward the law in general and alcohol and drug laws in particular. Item to scale intercorrelations range from .53 to .76.

4. *Positive or Negative Definitions of Use*

Respondents' own approval or disapproval of use.

III. Differential Association

5. *Significant Adults' Norm Qualities*

Respondents' perception of the approving-disapproving attitudes toward use held by adults whose opinions they value.

6. *Significant Peers' Norm Qualities*

Respondents' perception of the approving-disapproving attitudes toward use held by other teenagers whose opinions they value.

*The variable numbers in this list correspond to the variable numbers in the regression tables. For all items, questions were asked separately for alcohol and marijuana. Copies of the questionnaire and list of concepts measured by questionnaire items are available on request.

7. *Differential Peer Association Scale*
A scale of three items measuring how many of respondents' best friends, friends with whom they associate most often, and friends whom they have known for the longest time use the substance. Item to scale intercorrelations of the alcohol scale range from .85 to .96; for marijuana the range is from .83 to .96.
- IV. *Differential Reinforcement: Social*
 8. *Praise for Not Using*
Respondents' report as to whether or not friends, parents or both encouraged them *not* to use.
 9. *Friends' Rewarding or Punishing Reactions*
Respondents' report of anticipated or actual positive or negative sanctions of friends to respondents' use of the substance, ranging from encouraging their use to turning them in to the authorities.
 10. *Parents' Rewarding or Punishing Reactions*
Respondents' report of anticipated or actual positive or negative sanctions of parents for respondents' use of the substance, ranging from encouraging their use to turning them in to the authorities.
 11. *Informal Parental Deterrence*
Respondents' perceived probability that their parents would catch them if they used the substance.
 12. *Formal Deterrence*
Respondents' perceived probability that the police would catch them if they used the substance.
13. *Interference with Other Important Activities*
Respondents' perception of the extent to which using the substance would interfere with their participation in activities (i.e., school work, athletics, etc.) important to them.
- V. *Differential Reinforcement: Combined Social/Nonsocial*
 14. *Index of Social/Nonsocial Rewards Minus Costs of Use*
The total good things from a list of positive drug effects and social outcomes which the using respondent checked as having actually experienced and the nonusing respondents checked as what they perceived they would experience as a result of using the substance *minus* the total bad things checked (there is an equal number of good and bad possible consequences in the list).
 15. *Overall Reinforcement Balance*
Respondents' assessment of whether on balance mostly good things (such as "a good high or get along better with others") or mostly bad things (such as "a bad high or get into trouble") would (as perceived by nonusers if they were to use) or did (as reported by users when they used the substance) happen.
 16. *Usual Effects Felt When Used*
Respondents' report of the effects the substance usually has on them (from no effect, to mostly good, to mostly bad effects). Asked only of those using more than once.

RESEARCH NOTE

AMERICAN JEWISH DENOMINATIONS: A SOCIAL AND RELIGIOUS PROFILE*

BERNARD LAZERWITZ AND MICHAEL HARRISON

Bar-Ilan University

American Sociological Review 1979, Vol. 44 (August):656-666

This paper furthers our understanding of American religious pluralism by analyzing Jewish denominational patterns as revealed by data from the National Jewish Population Survey. A clear ranking among the denominational subgroups emerges, ranging from those identifying with Orthodoxy, to those identifying with Conservative Judaism, Reform, and finally those having no denominational preferences. This last group has the lowest levels of religious and ethnic identification. The subgroups closer to the Orthodox pole have higher levels of Jewish identification and observance, and are somewhat lower in socioeconomic status and voluntary association activities. The socioeconomic differences are considerably smaller than they are known to have been historically, but differences in the degree of Americanization, as indicated by the number of generations in the United States, remain strong. The data also show that marital patterns and certain secular attitudes and behavior are associated with denominational identification and synagogue membership. Analogies are suggested between the ideological and behavioral divisions within American Judaism and those found in Protestantism. Our findings point to the durability of a denominationalism which is becoming increasingly independent of its classic social and economic sources.

Religious associations have historically been one of the most prominent forms of voluntary association in American society. In addition to differing along theological lines, religious groups have often mirrored important social divisions within the American population and, thereby, have formed focal points for the expression of the interests and sentiments of socially distinct subgroups. Within American Protestantism this tendency toward differentiation achieved legitimation in the denominational principle (Mead, 1963; Parsons, 1960:295). The

character and functioning of American Protestant denominations has been the subject of a considerable body of research and commentary (e.g., Niebuhr, 1929; Anderson, 1970; Berger, 1969; Gaustad, 1962; Glock and Stark, 1965; Greeley, 1972; Laumann, 1969; Stark and Glock, 1968; Wilson, 1968a, 1968b).

On the other hand, less attention has been directed to the development of analogous denominational tendencies within smaller non-Protestant groups. Of particular interest is the development of a tripartite denominational structure within American Judaism. Several historical analyses trace the development of the American Jewish denominations (e.g., Sklare, 1972; Steinberg, 1965; Blau, 1969; 1976; Glazer, 1972; Liebman, 1965; 1973; Poll, 1969). In addition, surveys of individual metropolitan Jewish communities, such as those by Axelrod (1967), Dashefsky and Shapiro (1974), Goldstein and Goldscheider (1968), Lazerwitz (1973a), and Sklare and Greenblum (1967), provided some data on the characteristics of the members of these denominations. These local studies, however, typically suffer from sample designs that omit mar-

* Address all communications to: Bernard Lazerwitz; Department of Sociology; Bar-Ilan University; Ramat Gan, Israel.

The authors thank the Council of Jewish Federations and Welfare Funds for permission to use and publish these data from the survey it commissioned. They also thank the Institute for Jewish Policy Planning and Research for financial support. The computer installations of the University of Missouri and Bar-Ilan University were very generous in allotting free computer time for analysis. Credit for their fine research assistance must also be given to Mr. Patrick Corkery, Mr. William McKenzie, Mr. Randy Meyer, Miss Sarah Cohen, Miss Dahlia Rachman, and Mr. Moti Miron. We also acknowledge the helpful comments of Professors Alan Silver, J. Alan Winter, C. Liebman, and S. Weitman.

ginal members of the Jewish population, have limited sample sizes, and do not lend themselves to generalizations about American Jewry as a whole. Moreover, these local studies typically pay too little attention to individuals without any denominational preference or to those with denominational identifications who do not join synagogues. Large-scale sample surveys of the general American population cannot illuminate differences within American Jewry, since they include too few Jewish respondents.

In this report we analyse nation-wide survey data on the American Jewish population which finally provide an authoritative basis for the development of generalizations about the ethnic, religious, and social characteristics of Jewish Americans who do and do not, identify and affiliate with the major denominations. This first report presents these data in a form which permits comparisons with the available data on Protestant Americans. Subsequent reports from this study will examine the data's implications for some of the important theoretical questions about the sources and consequences of denominational differentiation. Even in the basic form in which they are presented here, these data make it clear that Jewish denominational involvement and differentiation are empirically more durable and important than they have previously been considered to be.

METHODS

Sample Design

The National Jewish Population Survey (NJPS) was a national survey of the United States Jewish population conducted from the early spring of 1970 to the end of 1971 for the Council of Jewish Federations and Welfare Funds. The sample yielded 5,790 household interviews at a 79% response rate. For the purpose of this survey, Jews were defined as persons who reported themselves Jewish or, failing this, as a person who had at least one Jewish parent. The sample design had to take into account that American Jewry constitutes only a few percent of the total American population, that a sizable pro-

portion do not live in neighborhoods with high concentrations of Jewish residents, and that many are not listed on readily available communal lists. The final design was a complex, multistage two-phase, disproportionately stratified, cluster sample. This design was guided by a variation of the city directory/block supplement sampling approach described in Lazerwitz (1968:314-20) and Kish (1965:352-8). Details on the sample, its response characteristics, and generalized sampling errors appear in Lazerwitz (1973b; 1974; 1978a). When a sampled household was found to contain a Jewish resident, basic information about the family was obtained and, via the Kish (1949) technique, one adult Jewish respondent was then selected from among all the Jewish adults in residence. (At this survey phase, there was additional subsampling within just the New York area.) Interviews with 4,305 adult Jewish respondents from this final sampling stage provide the national data reported here.

Variable Definition and Measurement

For reference, we summarize here the variables analyzed in this report:

(1) *Jewish denominational identification and synagogue membership.* Respondents were classified into four categories on the basis of their expressed denominational identifications. Individuals who did not identify with a denomination or said they were "just Jewish," were classified as having no denominational identification. In addition, respondents were asked whether they were members of a synagogue.

(2) *Jewish identification indices.* A set of items indicative of various aspects of religious and ethnic identification were used to create indices of the nine dimensions of Jewish identification described in Lazerwitz (1973a:205-10).¹ In brief these indices are:

¹ Details on these indices are available from the authors. There have been some limited operational changes in the indices of these dimensions in response to changes in specific questions on the national survey in contrast to the earlier Chicago area survey used in Lazerwitz (1973a).

Childhood home Jewish background—the Jewish aspects of respondents' childhood homes, covering items such as parental religious involvement, their Jewish organizational activities, and home holiday celebrations.

Jewish education—the type and amount received during childhood and adolescence.

Religious observance—respondents' present synagogue attendance, home religious observances of the Shabbat and the annual cycle of religious holidays, and observance of the dietary laws.

Pietism—observance of the more individualistic forms of religious expression such as private prayers and fasting.

Jewish ideology—extent to which being Jewish and retaining Jewish values are felt to be desirable and intrinsically worthwhile.

Ethnic community involvement—the extent to which a respondent's dating, courtship behavior, friends, family life, and social life have been confined to Jews.

Jewish organizational involvement—extent of membership, activity, and leadership in Jewish voluntary associations.

Jewish socialization of one's children—degree of respondent's past, present, and anticipated efforts to socialize his or her children into Jewish life.

Concern for world Jewry—attitudes toward Israel and degree of concern over the fate of Jews in difficult circumstances in the rest of the world.

(3) *Secular correlates of Jewish identification*. The NJPS data permitted the measurement of the following types of behavior and attitudes:

Membership and participation in general community voluntary associations—here summarized by an index which is a slightly modified version of the Chapin scale.

Political orientations—an index of attitudes to such issues as school busing and aid to welfare recipients. More liberal responses received higher index scores.

Religious background of spouse—information on the religious and denominational preference of the wives of male respondents when the couple first met.

(4) *Socioeconomic characteristics*. This variable covered respondent's education, the occupation of the head of the household, and total family income for the year prior to the survey.

(5) *Demographic characteristics*. This variable covered respondent's sex and age.

Generation in the United States—ranked as respondent foreign born; both parents foreign born; both parents born in the United States.²

Family-life cycle—respondents were grouped into ten categories ranging from unmarried respondents, through married couples with young or adolescent children, to couples whose children had left home, to elderly respondents living alone.

ANALYSIS

Denominational Identification and Affiliation

The NJPS data indicate that most American Jewish adults continue to identify with one of the major Jewish denominations and to join their synagogues. Half of the respondents reported that they were presently members of a synagogue. This figure underestimates the degree of informal association with synagogues, since membership entails expenses which some individuals are unwilling, or unable, to sustain. Moreover, data to be presented below suggest that many older respondents with grown children, who do not currently belong to synagogues, were previously members. Similarly, some of the younger nonmembers may be expected to join a synagogue as they enter their child-rearing years.

Overall, 86% of the respondents reported a denominational identification. Among synagogue members, 14% identified with Orthodoxy, 49% with Conservative Judaism, 34% with Reform Judaism, and 3% indicated no preference. Among those without a synagogue membership, 7% preferred Orthodoxy, 35% preferred Conservative Judaism, 33% preferred Reform, and 25% had no preference.

² To save space, we dropped the one parent native/one parent foreign-born category.

Given the importance of both synagogue membership and denominational identification, we may obtain a more precise picture of denominational patterns within American Jewry by combining our measures of these two key variables. The cross tabulation of the four-category denominational preference variable and the dichotomous membership variable yields an eight-fold typology of denominational orientations. However, the sample sizes of two of the eight subgroups are too small to justify their inclusion in statistical analyses. Respondents without a denominational identification rarely reported synagogue memberships. Moreover, there are only 174 respondents who identify themselves as Orthodox Jews and who are not members of a synagogue. Therefore, in subsequent tables, we shall report on the six major combinations of denominational identification and affiliation.

Social Characteristics

Table 1 provides data on the demographic and socioeconomic characteristics of individuals identifying and affiliating with each of the three major denominations and on the traits of the unaffiliated or

unidentified. As we shall show later, the ordering of the categories in the table is in terms of their emphasis on Jewish traditions. The Orthodox members represent the highly traditional pole of this dimension, while those without denominational preferences are at the opposite pole. Conservative Judaism is tradition-minded, but, in practice, more flexible in its demands on its members than Orthodoxy, while Reform Judaism is the least traditional of the three denominations.

The sex distributions of the members of most of the six subgroups are similar to that of the overall Jewish adult population. The prominent exception is that of members of Reform synagogues, two-thirds of whom are women. These synagogues would appear to have greater appeal for women because they de-emphasize the traditional religious distinctions between the sexes and are thus closer to the current secular ideal of sexual equality.

Taken together, the data on age, life cycle situation, and generation point to definite differences between the six categories. Over a third of the members of Orthodox synagogues are over sixty, and over half were born abroad. These first generation members include refugees

Table 1. Demographic and Social Characteristics by Denominational Identification and Affiliation of Jewish Adults, NJPS, 1971

Characteristics	Total Adult Sample	Orthodox Member	Conservative Member	Reform Not Member	Reform Member	No Identification
Sex—% Women	56%	57%	51%	54%	68%	50%
Age						
20–39 Years	30%	27%	27%	20%	24%	37%
60 and Over	27%	36%	24%	38%	24%	29%
Family Status						
Married with Children under 16 Years in Household	43%	30%	57%	29%	57%	38%
Generations in U.S.						
Foreign-Born	21%	52%	24%	27%	7%	17%
Both Parents U.S. Born	20%	5%	16%	13%	25%	37%
Socioeconomic Status						
College Grads.	35%	23%	34%	18%	52%	41%
Professional Owners and Managers	33%	31%	30%	23%	39%	38%
Family Income \$20,000 or more	29%	29%	44%	43%	20%	17%
Family Income \$20,000 or more	24%	16%	24%	12%	33%	28%
n	4,305	399	1,160	616	841	548

from Nazism, as well as aged representatives of the eastern European mass immigration that came to an end in the early 1920s. The third generation is scarcely represented among the Orthodox. The Reform and Conservative denominations are distinctive in their high percentage of married synagogue members with children under 18. Studies of members of synagogues and liberal churches (e.g., Sklare and Greenblum, 1967; Nash, 1968) suggest that many of these individuals are drawn to religious affiliation because of their desire to provide their children with a basic religious identification. Despite these similarities between the Reform and Conservative groups, the affiliates of Reform include more third generation and less foreign-born individuals. Nonmembers who identify with Conservative Judaism are older than both Reform and Conservative members. Such people apparently include more tradition-minded individuals who are not currently active in synagogues. In contrast, those nonmembers who identify with Reform or those who have no denominational identities include a disproportionate number of younger, unmarried adults. Third generation Americans are especially prominent among those expressing no denominational identification.

The strong generational differences between the subgroups reflect the influence of the Americanization process. The least Americanized are more attracted to Orthodoxy, while the most Americanized gravitate toward Reform or express no denominational preference. Conservative Judaism constitutes a middle ground. Multivariate analysis of the relationships between the demographic and denominational variables shows that the sizable life cycle and generational differences between the denominational groups are stable, with controls for the other variables, while the sex and age differences are much smaller.³

Table 1 also provides data on the socioeconomic characteristics of the six subgroups. As the figures for the total sample indicate, American Jewry has become

heavily middle- and upper-middle class. Sixty-two percent of the employed heads of households in the sample work as professionals, managers, or owners. Over a third of all American Jewish adults are college graduates. As a result of the overwhelmingly middle-class character of the American Jewish population, socioeconomic differences between the denominations have become muted, although they have not disappeared. The full tables on educational attainments show that there is a clear gradient; the Orthodox have the lowest levels of formal education, followed by the Conservative nonmembers, the Conservative members, and Reform nonmembers. The Reform members are the most educated subgroup. Similarly, Reform Judaism is distinguished among the three denominations in its ability to attract professionals and the more wealthy segments of American Jewry. The nonidentified individuals and those nonmembers identifying with Reform Jewry are also highly educated and well-off. Only the Orthodox and those without denominational identities include sizable proportions of blue-collar members (16% and 18%, respectively).

In general, then, the demographic and socioeconomic characteristics of the six denominational subgroups correspond to what might have been predicted on the basis of a hypothesis that the denominations may be ordered on a continuum from the least Americanized Orthodox through the Conservatives to the highly Americanized Reform and nonidentified groups. Contrary to this general pattern, however, those without denominational preferences are a highly heterogeneous group, composed of a mixture of the high-status younger adults and the lower status old. The elderly nonidentified appear to be the carriers of the Jewish socialist and secularist tendencies which have all but disappeared from contemporary American Jewish life. Thus, the nonidentified group closely resembles those adults in the general American population who express no religious preference (see Lazerwitz, 1961:575-76).

At the beginning of the twentieth century, Orthodoxy was the dominant form of Judaism for those eastern European

³ Portions of this multivariate analysis appear in Lazerwitz (1978b).

Table 2. Percent Having High Levels of Jewish Identification by Denominational Identification and Affiliation of Jewish Adults, NJPS, 1971

Identity Indices	Denominational Groups						
	All Adult Sample	Orthodox Member	Conservative Member	Conservative Not Member	Reform Member	Reform Not Member	No Identification
J. Background	36%	65%	38%	49%	29%	21%	17%
J. Education	36%	70%	50%	35%	38%	14%	15%
Rel. Behavior	33%	87%	59%	25%	26%	5%	3%
Pietism	42%	84%	64%	57%	25%	17%	8%
Ideology	36%	71%	52%	38%	36%	12%	11%
Ethnic Comm. Involvement	36%	71%	55%	37%	22%	17%	12%
J. Organization	29%	63%	49%	16%	43%	5%	7%
J. Socialization Children	39%	56%	48%	49%	37%	21%	16%
World Jewry	29%	29%	38%	22%	34%	22%	25%

immigrants who had not rejected religion in favor of socialism and freethinking. Reform appealed to the minority of higher status Jews, many of whom were of German origin or descent. Conservative Judaism emerged as the denomination of the second generation descendants of eastern European Jewry. While the denominations today still reflect something of these historic divisions, the differences have been greatly reduced by the socioeconomic achievements of most American Jews and the high proportion of marriages between Jews of different national origins.

Jewish Identification

While socioeconomic differences between the denominations are apparently declining, there are still strong differences between the denominational groupings in their patterns of Jewish identification. Table 2 gives the percentage of each of the subgroups who received high scores on the indices of Jewish identification described above.⁴ The table reveals a clear rank order among the groups; the Orthodox are the most highly identified, followed by Conservative members, Conservative nonmembers, Reform members, Reform nonmembers, while the nonidentified adults rank lowest. The ranking of the members of the denominations on the

dimensions of religious behavior and piety corresponds to the differing emphasis given by the denominational leaders to traditional observance. The pattern, however, also occurs on most of the other dimensions, where official denominational differences are less clear-cut. Thus, the data show that the denominational groupings are, in effect, ranked on their members' degree of ethnic Jewish identification as well as their religious traditionalism. Multivariate analysis suggests that these patterns are the result of a combination of processes of self-selection and influence. Individuals appear to choose the kind of denominational affiliation that most closely resembles the style of Jewish identity they desire for themselves and for their children, and then appear to be influenced by this denominational context.

The most important deviations from the ranking in Table 2 are the high levels of involvement of Reform members in Jewish organizations and the low level of involvement in such organizations among Conservative nonmembers (who include a substantial proportion of older adults).

Table 3 provides illustrative items from four of the indices in order to help illuminate the factors leading to denominational differences and similarities. Keeping a kosher home is a form of religious behavior called for by both Orthodox and Conservative Judaism, but it is optional for Reform Jews. In addition, it is something of a folkway among many first- and second-generation Jews, more of whom are identified with Conservative Judaism.

⁴ The scores for the various indices were ranged from high to low. Then they were divided into three categories in which the number of interviews were as nearly equal as possible. The category with the highest average score is called high-level identity.

Table 3. Illustrative Identity Items by Denominational Identification and Affiliation of Jewish Adults, NJPS, 1971

Identity Indices	Denominational Groups						
	All Adult Sample	Orthodox Member	Conservative Member	Conservative Not Member	Reform Member	Reform Not Member	No Identification
Kosher Home	30%	87%	42%	40%	6%	6%	9%
Frequent Syn. Attendance	13%	51%	24%	3%	13%	2%	1%
Member 2 or More Jewish Org.	24%	39%	40%	14%	41%	7%	5%
Visited Israel	16%	26%	18%	15%	20%	8%	13%

than with Reform. Frequent synagogue attendance is encouraged by all denominations and is a function of a variety of institutionalized influences as well as individual religious feelings. As a result, it varies between denominations and is more characteristic of members than of nonmembers. Membership in Jewish organizations is encouraged by all denominations and is similar among members of all three denominations, but it is less common among nonmembers. This pattern again reminds us that many Reform members are highly active in organized Jewish life despite their tendency to be lower than the members of other denominations in religious observance and background. Since the state of Israel has become a central, unifying symbol of the Jewish people, visiting Israel has become frequent among most subgroups. The less intensely identified and affiliated subgroups also have lower percentages of individuals who have visited Israel.

Secular Correlates of Jewish Identification

A few items in the NJPS permit the examination of the degree to which members of the denominational subgroups differ in attitudes and behavior reaching beyond the realm of Jewish institutions. The first two entries in Table 4 show a strong association between denominational identification and mate-selection patterns. The first entry shows that most couples had the same denominational identification when they originally met. Moreover, men with a denominational identification rarely met and married women with no identification. The second

row of the table shows the percentage of husbands who reported that their wives were not Jewish when they originally met. Intermarriage percentages are equally low for Orthodox and Conservative men, are roughly double for men identifying with Reform, and jump to 17% for those having no identification. These data make it clear that many of the Jewish men expressing no denominational preference are at the margins of the organized Jewish community.

The last two entries in Table 4 provide some indication of the attitudes and involvement of the respondents in the non-Jewish, general community. These data show that Reform members and nonmembers are more liberal politically than individuals associated with Orthodox and Conservative Judaism. Although this tendency partially reflects the higher socioeconomic status of the Reform Jews, multivariate analysis shows that it is not fully accounted for by this factor. Service to the general community and political liberalism are strong traditions within Reform Jewish life and historically have played an important part in the denomination's ideology. Despite their similarities to Reform, individuals lacking denominational identification are much less active in general community voluntary associations. In sum, the data show clearly that aspects of secular behavior and attitudes are strongly associated with denominational identification among American Jews.

CONCLUSIONS

Our intention in this report has been to provide a basic profile of the social and religious characteristics of individuals af-

Table 4. Secular Correlates of Denominational Identification and Affiliation of Jewish Adults, NJPS, 1971

Characteristics	Denominational Groups								
	All Adult Sample	Orthodox		Conservative		Reform		No Identification	
		All	Member Only	All	Member Only	All	Member Only		
									Member Only
% Men Marry within Denomination	56%	65%	—	67%	—	—	62%	—	55%
% Men Marry Non-Jewish Women	7%	3%	—	4%	—	—	9%	—	17%
% High Gen. Vol. Assoc.	29%	—	19	—	32%	—	50%	37%	20%
% High Political Issues	37%	—	27%	—	29%	23%	49%	42%	59%

filiating and identifying with Jewish denominations or having no denominational identification. We have omitted the presentation of conventional significance tests because they would add little to the results. The consistency of the patterns shown here, the large sample size, and the persistence of the major differences between the denominations when controls are introduced in multivariate analyses (e.g., Lazerwitz, 1978b) were sufficient to convince us that the patterns reported are unlikely to have been due to chance variations.⁵

In concluding, we shall briefly review our findings on Jewish denominational patterns. Then we shall compare and contrast Jewish and Protestant denominational differentiation and make some observations on the durability of the denominational pattern within American society.

Are the classic "social sources" of Jewish denominationalism disappearing with the increasing Americanization of the American Jewish community? It has been found that the historic differences between the denominations in terms of socioeconomic factors have declined considerably. While differences of education, occupation, and income do still appear among the subgroups, such differences are small and may be expected to decline even further. However, generations in the United States, a clear reflection of Americanization, are still a substantial source of distinction among the groups.

Differences in religious behavior and belief are strong and appear to be stable. These differences are not accounted for by the social and demographic characteristics of those belonging to, or identifying with the various denominations.

⁵ Some comment about significance testing is in order. First, this survey's complex, multistate, clustered sample data require special sampling error treatment which is presented in detail in Lazerwitz (1974). In general, the sample design effect (the blow-up over simple random sampling,) is 3.5. Anyone who wants to do significance testing with any of the percentages of this survey needs to multiply simple random sampling errors by 3.5 before plugging them into any significance testing equation.

Rather, denominational identification and affiliation with a synagogue are strongly associated with variations in Jewish behavior and orientations. At one pole are the Orthodox Jews, a small but active minority within American Jewry, who retain the highest levels of traditional Jewish behavior and ingroup involvement. At the other extreme are Jews without any denominational identification who rarely affiliate with Jewish institutions and ignore most Jewish traditions. The Conservative and Reform Jews maintain a position between these two poles; the Conservatives are nearer to the Orthodox pattern and the Reform are closer to that of the unidentified.

Our data also show that within the Jewish community, where religious and ethnic orientations are deeply intertwined, denominational identification and affiliation do have important secular correlates. The NJPS provides evidence on marital patterns, political attitudes, and membership in general community organizations, while other possible correlates are as yet unexplored. The Orthodox are characterized by greater political conservatism and greater involvement in the Jewish community than in the general, non-Jewish, community. Reform and Conservative Jews more typically appear to combine lower levels of Jewish involvement with more political liberalism and active participation in the general community. Jews without a denominational identification are less active in both Jewish and non-Jewish associations. This pattern may reflect their preference for more individualistic, and unconventional, sources of satisfaction and belonging.

Comparisons with Protestantism

The evidence from NJPS supports the assertions of Glock and Stark (1955), Greeley (1972), and others that America continues to be a "denominational society." Within American Jewry, as within American Protestantism (Glock and Stark, 1965; Stark and Glock, 1968) congregants continue to be divided into religiously distinctive camps. In Judaism, the lines of ideological division and the denominational structure closely resemble

those found in Protestantism. Among both Jews and Protestants there are clear divisions between an inactive sector, liberals, moderates, and conservatives. Moreover, in both religious groups the more conservative denominations are closer to a sectarian position in their social structure and ideology. These structural and ideological parallels have their counterpart in some noteworthy similarities at the level of individual behavior. The NJPS data, like the Lazerwitz (1973a) study of Protestants and Jews in Chicago, point to parallels between the levels of traditional religious behavior among Orthodox Jews and fundamentalist Protestants, among Conservative Jews and Protestants preferring Conservative denominations, among Reform Jews and liberal Protestants, and among those Jews and Protestants with no denominational preferences. The Chicago study also found similarities in the involvement of Reform Jews and liberal Protestants in general community organizations, and in their greater political liberalism. However, the actual levels of liberalism among all Jews, apart from the Orthodox, exceeded the Protestant levels.

Denominational identification and membership have strong associations with aspects of Jewish life that are above and beyond Jewish institutional boundaries. Can the same conclusion be drawn with respect to Protestant denominations? The search for such consequences of Protestant denominationalism has yielded little in the way of consistent results (Bouma, 1973; Rojek, 1973; Schuman, 1971; Winter, 1974). Perhaps the inability of researchers to find consistent and substantial secular consequences of involvement in Protestant denominations stems from their tendency to ignore differences between church members and nonmembers and the frequent absence of data on those who consider themselves Protestants but have no denominational preference. On the other hand, given the intensity and resourcefulness with which the search has been pursued, it may well be that there are quite limited Protestant denominational consequences in the political and economic areas. In contrast, the dual status of American Jewry as a minority religious-ethnic group heightens the likelihood that

differences in Jewish loyalty and belief will produce political and economic correlates. It seems more likely that there are direct effects of Protestant denominational orientations on values and behavior which are especially subject to individual discretion and less institutionally regulated, such as patterns of family life and use of leisure time.

The NJPS findings reinforce the position that socioeconomic status, ethnicity, and degree of urbanization or Americanization, now play, or soon will play, a less prominent role in sustaining denominational differences than in the past. While race and historical regional differences still contribute to Protestant denominationalism, the end of mass immigration, the urbanization of the United States, and the predominantly middle-class character of Protestant Americans (Anderson, 1970) and Jews indicate that the classic social sources of denominationalism are drying up. Instead, among both Jews and Protestants, religious and ethnic orientations are becoming increasingly independent of their original social correlates. Moreover, the tendency of increasing numbers of Jews and Protestants to eschew affiliation with organized religion may sharpen denominational differences rather than weakening them further. As the least committed drift away from religious affiliation, they will leave behind those for whom matters of belief and behavior have the most significance. Should these trends within the American Jewish and Protestant communities continue, we would anticipate the emergence of a denominationalism based more on variations of belief and religious style than on social and economic divisions.

REFERENCES

- Anderson, Charles
1970 *White Protestant Americans—From National Origins to Religious Groups*. Englewood Cliffs: Prentice-Hall.
- Axelrod, Morris, Floyd Fowler, and Arnold Gurin
1967 *A Community Survey for Long Range Planning: A Study of the Jewish Population of Greater Boston*. Boston: Combined Jewish Philanthropies of Greater Boston.
- Berger, Peter
1969 *The Sacred Canopy*. Garden City: Doubleday.
- Blau, Joseph
1969 *Modern Varieties of Judaism*. New York: Columbia University Press.
1976 *Judaism in America*. Chicago: University of Chicago Press.
- Bouma, Gary
1973 "Beyond Lenski: a critical review of recent 'Protestant Ethic' research." *Journal for the Scientific Study of Religion* 12: 141–56.
- Dashefsky, Arnold, and Howard Shapiro
1974 *Ethnic Identification Among American Jews*. Lexington: Lexington Books.
- Gausted, Edwin
1962 *Historical Atlas of American Religion*. New York: Harper and Row.
- Glazer, Nathan
1972 *American Judaism*. Chicago: University of Chicago Press.
- Glock, Charles, and Rodney Stark
1965 *Religion and Society in Tension*. Chicago: Rand McNally.
- Goldstein, Sidney, and Calvin Goldscheider
1968 *Jewish Americans: Three Generations in a Jewish Community*. Englewood Cliffs: Prentice-Hall.
- Greeley, Andrew
1972 *The Denominational Society*. Glenview: Scott Foresman.
- Kish, Leslie
1949 "A procedure for objective respondent selection within the household." *Journal of the American Statistical Association* 44: 380–7.
1965 *Survey Sampling*. New York: Wiley.
- Laumann, Edward
1969 "The social structure of religious and ethno-religious groups in a metropolitan community." *American Sociological Review* 34: 182–95.
- Lazerwitz, Bernard
1961 "A comparison of major United States religious groups." *Journal of the American Statistical Association* 56: 568–79.
1968 "Sampling theory and procedures." Pp. 278–328 in Hubert Blalock (ed.), *Methodology in Social Research*. New York: McGraw-Hill.
1973a "Religious identification and its ethnic correlates: a multivariate model." *Social Forces* 52:204–20.
1973b *The Sample Design of the National Jewish Population Survey*. New York: Council of Jewish Federations and Welfare Funds.
1974 *Sampling Errors and Statistical Inference for the National Jewish Population Survey*. New York: Council of Jewish Federations and Welfare Funds.
1978a "An estimation of a rare population group: the United States Jewish population." *Demography* 15:389–94.
1978b "An approach to the components and consequences of Jewish identification." *Contemporary Jewry* 4:3–8.
- Liebman, Charles
1965 "Orthodoxy in American Jewish life." *American Jewish Year Book* 66:21–97.
1973 *The Ambivalent American Jew: Politics,*

- Religion, and Family in American Jewish Life. Philadelphia: Jewish Publication Society.
- Mead, Sydney
 1963 *Lively Experiment: The Shaping of Christianity in America*. New York: Harper and Row.
- Nash, Dennison
 1968 "A little child shall lead them: a statistical test of the hypothesis that children were the source of the 'religious revival'." *Journal for the Scientific Study of Religion* 7: 238-40.
- Niebuhr, H. Richard
 1929 *The Social Sources of Denominationalism*. New York: Holt.
- Parsons, Talcott
 1960 *Structure and Process in Modern Societies*. Glencoe: Free Press.
- Poll, Solomon
 1969 "The persistence of tradition: Orthodoxy in America." Pp. 118-49 in Peter Roese (ed.), *The Ghetto and Beyond: Essays on Jewish Life in America*. New York: Random House.
- Rojek, Dean
 1973 "The Protestant Ethic and political preference." *Social Forces* 52:168-77.
- Schuman, Howard
 1971 "The religious factor in Detroit: review, replication, and reanalysis." *American Sociological Review* 36:30-48.
- Sklare, Marshall
 1972 *Conservative Judaism: An American Religious Movement*. New York: Schocken.
- Sklare, Marshall, and Joseph Greenblum
 1967 *Jewish Identity on the Suburban Frontier*. New York: Basic Books.
- Stark, Rodney, and Charles Glock
 1968 *American Piety: The Nature of Religious Commitment*. Berkeley: University of California Press.
- Steinberg, Stephen
 1965 "Reform Judaism: the origin and evolution of a 'Church' movement." *Journal for the Scientific Study of Religion* 5: 117-29.
- Winter, J. Alan
 1974 "Quantitative studies of the applicability of the Weber thesis to post World War II U.S.A.: a call for redirected efforts." *Review of Religious Research* 16:47-58.
- Wilson, Bryan
 1968a "Religion and the churches in contemporary America." Pp. 73-110 in William McLaughlin and Robert Bellah (eds.), *Religion in America*. Boston: Beacon Press.
 1968b "Religious organization." Pp. 428-37 in David Sills (ed.), *International Encyclopedia of the Social Sciences*, 13. New York: Macmillan.

COMMENTS

ORGANIZATIONAL THEORY AND CULTURAL INTRUSIONS INTO ORGANIZATIONS

(COMMENT ON LINCOLN, OLSON, AND
HANADA, ASR DECEMBER, 1978)*

Lincoln, Olson, and Hanada (1978) state that "rationalistic theories of organizational action and adaptation are at best incomplete." Their methodologically elegant research on Japanese firms located in the United States tantalizingly looks at the intrusion of the Japanese culture into the structure and operating processes of these firms. However, their results about the relevance of Japanese culture are inconclusive. Japanese culture appears to have clear effect on specialization, but it has unclear effect on other dimensions of organizational structure, such as centralization, formalization, and hierarchical ranking. Perhaps these findings are due to inadequacies in the conceptual model employed, which are the result of weaknesses in the theories of organizational action which the authors themselves note.

It seems that the authors' point about the inadequacies of rationalistic theories needs to be, and can be, clarified considerably. Not only do we need to recognize that "organizations incorporate as permanent features of their operations blueprints of the habits, customs, and values of their members and the larger population in which they are imbedded," but also we need to develop models for just how these intrusions from the surrounding cultures actually coexist with other structural dimensions of organizations. What sort of blendings occur? What mechanisms control the pervasiveness of the external and, sometimes alien, cultural patterns within an organization?

Some years ago I tried to develop such a model by pointing to strategically placed areas of localized discretion (local autonomy) that exist within organizations (Katz, 1968; 1976). In contrast to models that emphasize control—including hierarchy, centralization-decentralization—one can conceive of organizations as mosaics of localized and coexisting autonomy. There are several distinctive forms of autonomy; autonomy is clearly locatable; autonomy has definite limits. For instance, executives have certain forms of

decision-making autonomy; technical specialists have certain forms of decision-making autonomy; assembly-line workers, too, have certain forms of autonomy. These forms of autonomy are based on the tasks that need to be done and the goals that are being pursued. But they also are based on the environment in which the organization exists and to which it adapts. For example, it has long been known that assembly-line workers can bring into their daily work activities many of the thought-ways of their external life. They have the autonomy to do this. Conversely, executives export the thought-ways of the business into their community activities. Their autonomy facilitates this. Such culture *import* and *export* processes are part of the adaptive process of organizations. They tend to be built into the structural arrangements that make up an organization.

Structural arrangements may include countervailing forces. For instance: (1) A physician accepts close control over his or her salary and clinical work schedule by a hospital's administration in return for much autonomy to carry out research. The research may involve great attunement to the "outside" world of research and minimal attunement to some of the hospital's needs for immediate practical results. (2) Assembly-line workers' autonomy to think and talk about outside interests—sports, sex, family—is counterbalanced by their disfranchisement from the administrative culture of the organization in which they are employed.

In short, organizations are not merely open systems in the sense that the outside culture intrudes (and it, in turn, extrudes some of its culture into its environment). They are open systems of a special sort. To be sure, they permit the outside culture to have entry into the organization. But they have definite ways of channeling this intrusion, of limiting it, of harnessing it, and of adapting to it in patterned ways. All this is facilitated by the manner in which autonomy is suffused throughout the structure of organizations.

It seems that such a model could help clarify "Japaneseness" in the factories studied by Lincoln, Olson, and Hanada. It would help focus on how Japanese cultural patterns are channeled and just how they are amalgamated with American patterns. This, in turn, would be useful for developing more adequate models for intercultural adaptations. When organizations sink roots in a different culture from the one in which they were initially nurtured,

* Direct all communications to: Fred E. Katz, Coordinator; Health Services Center; VA Medical Center; Perry Point, MD 21902.

they make adaptations. These need to be conceptualized in order to be understood.

Fred E. Katz
Johns Hopkins University
 and *Perry Point VA Medical Center*

REFERENCES

- Katz, F. E.
 1968 *Autonomy and Organization: The Limits of Social Control*. New York: Random House.
 1976 *Structuralism in Sociology: An Approach to Knowledge*. Albany: SUNY Press.
 Lincoln, James R., Jon Olson and Mitsuyo Hanada
 1978 "Cultural effects on organizational structure: the case of Japanese firms in the United States." *American Sociological Review* 43:829-47.

REPLY TO KATZ*

Katz argues that students of cultural influences on organizational structures should adopt a model of organizations which explicitly recognizes that employees possess the autonomy to "import" and "export" cultural beliefs and values across organizational boundaries. We do not take issue with this view but neither do we find it illuminating. To say that employees "... bring into their daily work activities many of the thought-ways of their external life" because "they have the autonomy to do this" is tantamount to saying that they do it because they can do it. We doubt that one has progressed very far toward an explanation of cultural influences by merely acknowledging that organizational constraints are not so severe that cultural phenomena are invariably barred from finding their way into organizational processes.

If there is any real point of contention between Katz and ourselves it hinges on his implication that our neglect of the autonomy question accounts for our failure to find cultural effects on certain structural dimensions. This perplexes us. Unless he means that we might have included some measure of autonomy in our regressions or otherwise respecified them in conformity with a "culture-via-autonomy" model, it is hard for us to grasp the sense in which our results might have proved different. That Katz did not in fact propose such concrete changes in our research strategy suggests that no such carefully considered matters motivated this criticism.

James R. Lincoln
Indiana University
 Jon Olson
University of Southern California
 Mitsuyo Hanada
Institute of Business Administration
and Management, Tokyo

* Address all communications to: James R. Lincoln; Department of Sociology; Indiana University; Bloomington, IN 47401.

WHOSE STATUS COUNTS?

(COMMENT ON TITTLE, VILLEMEZ, AND SMITH, ASR OCTOBER, 1978)*

In their splendid article, Tittle et al. (1978) performed a considerable service by their painstaking demonstration that the large empirical literature fails to demonstrate any important correlation between class and delinquency. I have been reporting this lack of a relationship in my textbooks throughout this decade (Stark, 1973; 1975; forthcoming). And, I have often been criticized for doing so. I may now cite a quite definitive work in place of my own, far less systematic, reading of the evidence.

However, as I have pointed out in the same textbooks, there is a very important way in which it can still be said that class has a considerable negative impact on delinquency. Since writing in lower division textbooks does not inform a professional audience, I offer this brief comment on Tittle et al. in order to extend their discussion and to clarify the theoretical meaning of the lack of a class-delinquency relationship in the literature.

In the studies in question, social class or SES is measured by the *family* status of juveniles. The assumption is made that children are of the same social class as their parents. However, we know from studies of status attainment (cf. Blau and Duncan, 1967) that, at least in the United States, the majority of adults are not of the same status as their parents—the majority move upwards or downwards from their status of origin. This raises important questions. At what age does mobility begin? At what age has the mobility process reached the point where status of origin is an inaccurate measure of current status? For practical reasons we usually have ignored these questions and have waited until people have completed their education and found their own niche in the labor force before we have assigned them their own status, as distinct from the status of their family. Yet, it will be obvious that the process by which young people achieve educations and find a position in the labor force begins at a much younger age. Indeed, it easily is seen that the position young people have attained in teenage society—especially in the status system of the school—is a very strong predictor of where they will end up as adults. People who are "succeeding" in high school usually add to this success later. People near the bottom of the high school status system tend to remain near the bottom in later life. Indeed, for the majority

* Direct all communications to: Rodney Stark; Department of Sociology; University of Washington; Seattle, WA 98195.

of school drop-outs, the status attainment process virtually ends during their teens.

To these considerations, add the fact that the delinquency research uniformly finds that *position in teenage society is very strongly, negatively related to delinquency*. The better a person is doing in school, the higher a person stands among his or her peers, the less likely that person is to commit delinquent acts (cf. Hirschi, 1969). If we assign teenagers a class position of their *own*, based on their standing relative to their peers, then we find a powerful negative relationship between class and delinquency. It is only when we assign young people a class position on the basis of their parents' status that we find little or no relationship.

Thus, two things can be (and appear to be) true at the same time. (1) Young people from wealthy homes are about as likely as young people from poor homes to commit acts of delinquency. (2) A young person's own status is strongly related to delinquency. Both can be true because family status is so weakly related to the status of offspring.

This raises the possibility that empirical suggestions of an historic decline in the association between family status and delinquency might reflect a weakening of the association between status attainment and status of origin as well as the reforms in the justice system mentioned by Tittle et al. In any event, theories predicting a relationship between class and delinquency (for example, strain and control theories) are not called into question by the lack of correlation between family status and delinquency. The contradiction between these theories and the data evaporates when we recognize that family status is not adequate as a proxy variable for the status of teenagers.

Having added these points to the discussion, I should like to congratulate Tittle et al. for their careful and imaginative scholarship.

Rodney Stark
University of Washington

REFERENCES

- Blau, Peter M., and Otis Dudley Duncan
1967 *The American Occupational Structure*. New York: Wiley.
- Hirschi, Travis
1969 *Causes of Delinquency*. Berkeley: University of California Press.
- Stark, Rodney (Ed.)
1973 *Society Today*. 2nd ed. Del Mar: CRM Books.
1975 *Social Problems*. New York: Random House.

Forth: Sociology. New York: Worth.
coming

Tittle, Charles R., Wayne J. Villemez, and Douglas A. Smith

- 1978 "The myth of social class and criminality: an empirical assessment of the empirical evidence." *American Sociological Review* 43:643-56.

REPLY TO STARK*

We appreciate the kind remarks of Professor Stark, and are pleased that our empirical research has confirmed some of his notions. He has provided an additional caveat to those we suggest, which, of course, adds an element of wise reserve. Nevertheless, it appears to us that his effort to "rescue" the class/delinquency relationship is likely to create more confusion than clarification. Therefore, we feel compelled to point out some problems with his argument.

His central point is simply that the proper data for ascertaining the social class of teenagers is not the social class of their families, but rather their positions in a high school status hierarchy. With social class thus measured, he argues, the class/criminality relationship is empirically supported. Note the following, however:

(1) Our focus was the general relationship between illegal behavior and social class. Professor Stark seems to assume that the analysis deals only with juveniles since he overlooks the inclusion of adult studies as well as the separate figures for adults and juveniles which show similar patterns. It would be difficult to apply his suggested explanation to adults.

(2) Stark cites Blau and Duncan to the point that the status of most persons ultimately differs from their status of origin, and he concludes from this that origin is a poor measure of class for juveniles. But apart from the problem of determining when mobility begins, Blau and Duncan also show that most completed intergenerational mobility in the United States is short-distance mobility. The average move is so small that it would probably be inconsequential for class/crime theories.

(3) Stark's contention that position in a high school status hierarchy is a predictor of future status superior to that of family of origin is dubious, both conceptually and empirically. It is hard to imagine that the attributes positively evaluated by teenagers are those crucial to fu-

* Direct all communications to: Charles R. Tittle; Department of Sociology and Social Psychology; Florida Atlantic University; Boca Raton, FL 33431.

We are grateful to John Johnstone for his comments on a draft of this reply.

ture success, and we know of no studies which directly examine that relationship controlling for class of origin. Position in teenage society has been shown to be a good predictor of expected future status, but that is not the same thing.

(4) We do not dispute that position in any evaluative hierarchy could be negatively related to deviance; the self-esteem literature suggests as much. Indeed, a full theory about delinquency built around Stark's notion would be a welcome addition to the field. We do dispute, however, the use of teenage status as a measure of social class, particularly as social class is understood from theories which lead to a class/criminality hypothesis. Such usage does violence to the concept of class and class effects. Granted, class of origin may once have been a stronger predictor of status in high school than it is now. And it may be that high school status is the best independent predictor of delinquency (although we doubt it). But in our opinion, neither of these really has anything to do with the class/delinquency relationship because high school status systems are too transitory and varied from school to school to embody things implied by theories about social class and criminality.

Stark's commentary does bring to mind an important issue about delinquency and social class that is raised by our findings. There does appear to be an empirical relationship between class origin and academic performance in high school. There also seems to be a consistent and strong association between academic perform-

ance and delinquency (although neither of these apparent relationships has been subjected to rigorous comparative analysis like that we used in our examination of the class/criminality relationship). Therefore it should follow that there would be a strong class origin/delinquency association, but of course, our paper shows that in general such a relationship has not been demonstrated. Either the origin/performance or the performance/delinquency association is in error or some rather complex interactions are involved which need to be sorted out empirically. But this problem cannot be solved by merely relabelling position in a high school status system as social class.

In summary, we think the attempt to reconcile our findings with others about delinquency is a worthy enterprise. But Stark's assumptions contradict some well-established precepts from the field of stratification.

Again, we appreciate Professor Stark's credible attempt to solve a knotty problem raised by our results. We are intrigued with the puzzle ourselves, and we invite others to join in the effort to figure out what is going on.

Charles R. Tittle
Florida Atlantic University
Wayne Villemez
University of Illinois
at Chicago Circle
Douglas Smith
Florida Atlantic University

ITEMS (Continued)

growth, cross-national analyses of political democracy, and methodological problems of using ratio variables.

■ **LAWRENCE E. COHEN** (Social Change and Crime Rate Trends) is Assistant Professor of Sociology at the University of Illinois. His research centers on analysis of victimization survey results and modelling the criminal justice system. **MARCUS FELSON** is Associate Professor of Sociology at the University of Illinois. He is primarily interested in social trends and cycles, including the investigation of hourly activity patterns and their change. He is carrying out additional applications of the "routine activity approach" described here and is broadening this perspective into a more general social accounting framework for organizing the investigation of collaborative activities.

■ **FRANK D. BEAN** (Intergenerational Occupational Mobility and Fertility) is Professor and Chairperson of the Department of Sociology at the University of Texas, Austin. He is working on a project focusing on female status, migration and fertility in Colombia. He has edited (with W. P. Frisbie) a monograph entitled *The Demography of Racial and Ethnic Groups* (Academic Press, 1978). **GRAY SWICEGOOD** is a Ph.D. Candidate in the Department of Sociology at the University of Texas, Austin. His research interests include social mobility and fertility, voluntary sterilization, and energy flow and social change in West Germany.

■ **CHARLES RAGIN** (Ethnic Political Mobilization: The Welsh Case) is Assistant Professor in the Department of Sociology at Indiana University. His research focuses on comparative ethnicity, nationalism, economic development and Weberian methods of social historical research.

■ **RONALD L. AKERS** (Social Learning and Deviant Behavior) is Professor of Sociology at the University of Iowa. He is studying adolescent drug and drinking behavior. In 1977 he authored *Deviant Behavior: A Social Learning Approach* (Wadsworth). He also has edited (with Marvin D. Krohn) *Crime, Law and Sanctions* (Sage, 1978). **MARVIN D. KROHN** is Assistant Professor of Sociology at the University of Iowa. He is investigating theoretical perspectives on adolescent deviant behavior. **LONN LANZA-KADUCE** is a Ph.D. Candidate in the Department of Sociology, University of Iowa, and is evaluating the treatment program of a medium security correctional facility. **MARCIA RADOSEVICH** is a Ph.D. Candidate in the Department of Sociology at the University of Iowa. She is interested in opinion and knowledge of the law, and female criminality.

■ **BERNARD LAZERWITZ** (American Jewish Denominations) is Professor in the Department of Sociology, Bar-Ilan University, Ramat Gan, Israel. He is investigating religious change in Israel, urban renewal in Tel-Aviv, and ideological migration. With R. Maris, he has authored *The Dynamics of Jewish Identification*. **MICHAEL I. HARRISON** is Senior Lecturer in the Department of Sociology, Bar-Ilan University. He is studying contingency theories of organizational structure.

■ **FRED E. KATZ** (Comment on Lincoln et al., ASR December, 1978) is Associate Professor at Johns Hopkins University and Director of the Health Services Research and Development Center, VA Medical Center, Perry Point, Maryland. He is doing research in the area of the sociology of extreme behavior, and social networks and access to health services.

■ **RODNEY STARK** (Comment on Tittle et al., ASR October, 1978) is Professor of Sociology at the University of Washington, Seattle.

Published by the American Sociological Association

Recent issues contain reports on:

**RICHARD TESSLER AND
DAVID MECHANIC**

**Psychological Distress and
Perceived Health Status**

**MARIE HAUG AND
BEBE LAVIN**

**Method of Payment for Medical
Care and Public Health Care
Policy**

**ROBERT J. MARSHALL, JR.,
JOHN P. FULTON, AND
ALBERT F. WESSEN**

**Physician Career Outcomes and
the Process of Medical
Education**

**LEONARD I. PEARLIN AND
CARMİ SCHOOLER**

The Structure of Coping

JOHN D. CAMPBELL

**The Child in the Sick Role:
Contributions of Age, Sex,
Parental Status, and Parental
Values.**

**\$16 per year for libraries and institutions; \$8 per year for ASA members;
\$12 per year for all other individuals**

**Concerning subscriptions, address the Executive Office, American Sociological
Association, 1722 N Street, N.W., Washington, D.C. 20036.**

ISSN 0022-1445

JOURNAL OF HEALTH & SOCIAL BEHAVIOR

AMERICAN SOCIOLOGICAL REVIEW

THE STRUCTURE OF A NATIONAL ELITE NETWORK*

GWEN MOORE

State University of New York, Brockport

American Sociological Review 1979, Vol. 44 (October):673-692

This paper addresses a long-disputed issue: the degree of integration among political elites in the United States. This issue is examined through an investigation of the structure of an elite interaction network as revealed by recently developed procedures for network analysis. The data, taken from the American Leadership Study conducted by the Bureau of Applied Social Research in 1971 and 1972, consist of interviews with 545 leaders of major political, economic and social institutions. The study's wide institutional representation, sociometric data, and focus on major issues of the early 1970s make it virtually unique for examining elite integration.

The structure of national elite groups, and particularly the degree to which they are integrated, is a critical issue in political sociology and political science. While considerable integration of elites was generally assumed by the classical elite theorists, Pareto, Mosca and Michels, recent investigators have disagreed strongly about the relative amount, causes and consequences of elite integration in western, industrialized societies.

In the United States a lengthy debate over the structure of power and influence at the national level has centered on the degree to which this structure is unified or diversified. Ruling class and power elite

theorists¹ such as Mills and Domhoff find a considerable amount of integration, with various bases, in the national power structure. According to Mills (1956:292):

The conception of the power elite and of its unity rests upon the corresponding developments and the coincidence of interests among economic, political, and military organizations. It also rests upon the similarity of origins and outlook, and the social and personal intermingling of the top circles from each of these dominant hierarchies.

The existence of a broad, inclusive network of powerful persons with similar social origins, in different institutions, is then one important feature of this view of the power structure.

Pluralists find little integration among elites in diverse sectors. For example, in drawing conclusions from his study of private power and American government, McConnell (1966:339) writes:

The first conclusion that emerges from the present analysis and survey is that a sub-

* Direct all communications to: Gwen Moore; Dept. of Sociology; Uris Hall; Cornell University; Ithaca, NY 14853.

An earlier version of this paper was presented at the 1978 meetings of the American Sociological Association, San Francisco. The work reported here, part of the American Leadership Study and the Comparative Study of National Leaders' Networks, was supported by NIMH grant MH17919-01 and National Science Foundation grant GS35828X. I am grateful to Allen H. Barton, G. William Domhoff, Charles Kadushin, Edward W. Lehman, Herbert Menzel, Beth Mintz, R. Wayne Parsons, Carol H. Weiss, J. Allen Whitt and Dennis H. Wrong for helpful comments on previous drafts of the paper. I would especially like to thank Richard D. Alba for valuable assistance with the data analysis and suggestions on earlier versions of this work.

¹ Recent empirical work on the structure of power in the United States has often combined elements of classical elitist and Marxist theories (e.g., Mills, 1956; Domhoff, 1967; 1970; Miliband, 1969). While important differences distinguish these theoretical positions (Alford, 1975; Whitt, 1979), contemporary scholars in both traditions usually agree that a unified ruling elite, with strong ties to an upper social class, exists in the United States.

stantial part of the government in the United States has come under the influence and control of narrowly based and largely autonomous elites. These elites do not act cohesively with each other on many issues. They do not "rule" in the sense of commanding the entire nation. Quite the contrary, they tend to pursue a policy of noninvolvement in the large issues of statesmanship, save where such issues touch their own particular concerns.

Pluralists argue that each elite group is distinct and narrowly based, with influence confined to the issues most relevant to its membership (Rose, 1967; Dahl, 1961; Polsby, 1963). Elites are seen as fragmented rather than integrated since each is involved primarily with its own relatively narrow concerns and constituencies (Keller, 1963; Aron, 1966).

The study reported here assesses the extent of integration in a network of political elites in the United States.² The concept of political elite integration has several dimensions including, at least, social homogeneity, value consensus and personal interaction (Putnam, 1976: 107). Social homogeneity, the extent to which elites share class and status origins and common experiences such as attendance at exclusive private schools, is usually seen as fostering integration (Mills, 1956; Domhoff, 1967; Baltzell, 1964; Dye, 1976). For example, Porter (1965:528), writing about Canadian elites, concludes:

Even if they have never met before, when they come into contact with one another as members of elites their identity of interests stemming from their common social characteristics and experiences facilitates communication.

² The term *political elite* as used here refers to persons who by virtue of their institutional positions have a high potential to influence national policy making. Thus, the political elite consists not only of high-ranking government officials but also of top position holders in large organizations in the private sector including major corporations, labor unions and other organized interest groups which attempt to influence government policy. In a similar definition, Parry (1969:13) includes in the political elite politicians, government officials and the leaders of various interest groups which attempt to influence the allocation of values in society. For stylistic variation, I sometimes use the terms *leaders*, *influentials* or simply *elites* to refer to political elites.

The degree to which leaders agree on political beliefs, both specific public policies and broad ideological orientations, is often used as a measure of value consensus (e.g., Putnam, 1976; Prewitt and Stone, 1973; McClosky, 1964; Barton, 1974; Higley et al., 1976). Agreement among elites at least on the "rules of the game" usually is considered essential not only to integration but also to political stability (Prewitt and Stone, 1973; Field and Higley, 1973).

Personal interaction among elites is probably the crucial dimension of integration. Giddens (1975:120), for instance, defines an integrated elite as one in which members of different elite groups frequently interact as acquaintances, friends or kin. He contends that a highly integrated elite is likely to exhibit both solidarity and relatively little conflict. Many others (e.g., Bonilla, 1970; Mills, 1956; Domhoff, 1967; Kadushin, 1968) see interpersonal contact among political elites in diverse positions as essential for the development and maintenance of integration at the national level. In a common view, the social organization which is a prerequisite for integration depends in part on a network structured to facilitate interaction and communication among persons in high-level positions in all major institutions. Without extensive connections among persons in different institutions, value consensus could not be achieved or maintained, and the development of solidarity could not occur since it requires trust and familiarity. Elite groups in different sectors would then remain largely encapsulated and fragmented. The investigation of the structure of elite interaction networks thus is a central concern in the assessment of elite integration.

While, with the exception of Hunter's (1959) *Top Leadership USA*, no previous studies of interaction among elites in diverse positions in the United States have been reported, formal connections, such as common membership in organizations or social groups, often have been used to analyze interconnections among elites. There has been much recent attention to tracing interlocking directorates in major U.S. corporations (Levine, 1972; Allen, 1974; Sonquist and Koenig, 1975; U.S.

Congress, 1978). The implicit assumption in such studies is usually, according to Allen (1974:393), that: "... interlocking directorates serve as at least partial evidence that contemporary industrial society is dominated by a coherent and cohesive economic elite."

These ties are thus seen as fostering integration, cohesiveness and perhaps consensus within the business community. Sonquist and Koenig (1975:199) argue that:

Being a member of a network of individuals in the business world outside of one's "home" company provides common life experiences, common views of reality, definitions of what is right and wrong, and opportunities to validate one's beliefs about social and economic issues and the goals that one ought to pursue with respect to them.

Also:

A consequence of multiple participation is the maintenance of well-oiled communication channels.

Many social scientists have examined sociometric ties among elites in individual communities or groups (e.g., Laumann and Pappi, 1973; 1976; Laumann et al., 1977; Kadushin, 1974; Presthus, 1974), but such data rarely have been gathered for major groups at the national level (but see Bonilla, 1970; Barton et al., 1973; Higley et al., 1976; Higley et al., 1979; and Denitch, forthcoming). The American Leadership Study, a survey of top position holders in powerful American institutions, which includes data on interpersonal contacts, offers a unique opportunity to examine the extent of integration or fragmentation among political elites in the United States.

I begin with an examination of the structure of an elite interaction network, with particular interest in whether or not it contains many distinct groups individually formed around narrow issue concerns or, rather, a few large and inclusive groups, each including varying constituencies and concerns. This examination locates one large, cohesive group of leaders, representing all major institutions and issue areas, which serves to integrate the network. Given this finding of integration of American leaders in a large "central cir-

cle," two additional issues are addressed. In order to validate the method used, i.e., to be certain that this circle contains the most powerful or influential elites, the members of this central circle are compared with others in similar top-level positions to see if circle members are more influential in ways other than circle membership. Then, the relationship between social origins and current affiliations and membership in the central circle is examined to see if high status origins or influential current affiliations (beyond primary institutional position) are advantageous in achieving connections to this group. Thus, this analysis not only examines the extent of integration but also the social bases for the integration that is found.

RESEARCH DESIGN

The data used are taken from the American Leadership Study, a survey of 545 top position holders in key institutions in American society conducted in 1971-72 by the Bureau of Applied Social Research, Columbia University. Through personal interviews, information was gathered on respondents' policy influencing and policy making activities on major national issues. Extensive attitude and social background data also were collected. The study's wide institutional representation, collection of sociometric data and focus on major issues of the time make it well-suited for evaluating elite integration.

The sample is drawn from persons in the top positions in ten institutional sectors assumed to exercise power in American society. The institutions and positions sampled in each are shown in Table 1. The leaders in the positional sample were asked to name other persons with whom they interact or who they felt were currently influential among leaders in the United States. From the responses to these questions a snowball sample of 61 "opinion-leaders" (Katz and Lazarsfeld, 1955; Kadushin, 1968) was chosen to correct for important omissions in the positional sample. Most persons in the snowball or reputational sample were in one of the ten positional sectors, especially Congress and the media; a few were not; these

Table 1. American Leadership Sample Sectors

Sector	Position
Congress	Senators; members of House of Representatives in following categories: chairman and ranking minority members of all House committees; all members of the Rules, Appropriations and Ways and Means Committees; 50% of sample was drawn from Senate, remainder from House.
Federal Administration— Political Appointees Civil Service	Secretaries, assistant secretaries, and general counsel of cabinet departments; heads and deputy heads of independent agencies. Two highest civil service grades from all cabinet departments and independent agencies.
Industrial Corporation	Fortune 500 largest industrial corporations in 1969.
Nonindustrial Corporation	Fortune 300 largest nonindustrial corporations in 1969; 50% of sample is from banks and insurance companies, remainder from utilities, transportation and nonindustrial corporations.
Holders of Large Fortunes	Holders of fortunes worth at least \$100 million.
Labor Union	Presidents of unions with at least 50,000 members; officials of the AFL-CIO.
Political Party	Members of Democratic and Republican National Committees; state and city chairpersons of these parties.
Voluntary Organization	Elected head and full-time director of various public affairs organizations including professional societies, farmers' organizations, women's groups, religious organizations, civil rights organizations, business groups and others.
Media	Editors of largest circulation newspapers and public affairs periodicals; syndicated columnists and news executives; broadcasters and commentators of national networks.

include academics, White House staff, governors and mayors. In light of the debate over methods for identifying influential or powerful individuals, it is worth noting that in this case the same persons frequently were identified by the positional and reputational (snowball) techniques. Depending on how many respondents were added in the snowball phase in a given sector, 50 to 60 persons were interviewed in each positional sector.³ (Because of similarities in function, I combine the industrial corporations, nonindustrial corporations and holders of large fortunes in a sector called business. Likewise, members of the White House staff are analyzed as part of the political appointees' sector.) The overall completion rate for the interviews is just over 70% (see Barton et al., n.d., for a more complete description of the sample).

Each respondent was asked to choose one national issue on which he or she most actively had attempted to influence national policy or inform public opinion in the past few years. The major part of the interview then focused on activities and contacts concerning this issue. A wide

variety of issues was chosen, most of which were related to the individual's formal position. For example, business leaders often decried the recent institution of price controls, while labor leaders discussed their opposition to wage controls. While respondents usually discussed narrow issues (e.g., prices in the steel industry, U.S. policy toward a specific country), when similar issue concerns were collapsed into more general categories, three major issue areas emerged. The most frequently discussed issue area was the economy (28.6%), a prime concern of government, business and labor at that time. Wage and price controls were instituted by President Nixon during the interviewing period and, as noted, many respondents chose the topic of controls as their issue focus. Other common issues were foreign policy (17.2%), especially the war in Southeast Asia, and a variety of social policy issues (26.6%), including poverty, race relations and urban problems. Less frequently discussed issues include the environment, law and order, and government reform. A series of sociometric questions referring to the respondent's major issue of activity was asked. These questions dealt with both personal contacts (e.g., "Of the various people you

³ The number of respondents in each sector is shown in Table 4.

have talked with about this issue, who had the most useful and interesting things to say?"⁴) and reputation for influence (e.g., "Who has the greatest influence among leading Americans on this issue?"). Respondents were allowed an unlimited number of responses to each sociometric question. The network analyzed here is constructed only from those nominations involving direct personal contact; nominations referring to reputation for influence are used subsequently for purposes of validation. A variety of questions on personal contacts was used to elicit each respondents' interaction partners in various sectors and situations within the context of his or her chosen issue area. In the analysis nominations from all questions are combined to yield each person's interpersonal connections in this limited issue context.

The interpersonal network in these data, resulting from interaction related to a specific issue for each respondent, generally reflects informal discussions or day-to-day interaction on these issues. This network is, of course, not identical with networks formed in other contexts and does not include all personal connections which exist among the individuals in this study. Undoubtedly, many persons in this network who are personally acquainted or who interact socially did not report that fact here (see Bonilla,

1970:150; also Barton, n.d.). Also, let me note that given the focus on specific issues, this network does not reflect issues which remain potential or undiscussed (Bachrach and Baratz, 1963; Lukes, 1974).

Several aspects of the procedure for collecting the sociometric data need to be pointed out so that their possible effects on subsequent findings may be understood. The first and most important is the snowball sampling method itself. It is not feasible to carry out an elite study in a large differentiated society like the United States by interviewing all members of elite groups. But since relations between members of a *sample* may be few and scattered, a study which intends to examine individuals' positions within an elite network must supplement any initial random sample. It is necessary to pursue chains of linkages originating in the initial sample to gain some view of the network structure and snowball sampling is one method of pursuit (see Erickson, 1979; Kadushin, 1968). A snowball sample gathers individuals through interviews with those named (in this case, frequently named) by members of the original sample. The snowball phase may consist of a single wave, following only the direct links of the original sample, as was done here, or a larger number of waves, successively following links of each previous wave of the snowball sample.

The mere fact that links are traced by the snowball sampling method does not lead to the artifactual emergence of circles and cliques in the network data, since the chains are naturally occurring. In this case, in any event, chains are followed for only one link, rather than pursued until a particular connection is made, as in the "small world" method. Clearly, such a procedure does not guarantee finding a strongly interconnected network. Even were the chains traced further, a network structure consisting of small, disconnected groups rather than a large inclusive one should emerge from the data if the pluralist conception of fragmented elites is accurate.

Also, the wide variety of issue areas discussed makes a finding of small, issue-based groups more likely than one of

⁴ Other interaction questions are: Have you drafted proposals or written memoranda recommending policies to follow on this issue? To whom? Have you talked with individual legislators about your policy position on this issue? With whom? Have you talked with federal officials about your policy position on this issue? Which people? Have you tried to get people that you know to support or oppose legislation on this issue? Who? An additional six questions were asked of snowball respondents: Have you talked with (substitute the phrases: people in business and finance, labor leaders, other interest group leaders, mass media people, people at the political party organizations, people in the White House) about your policy position on this issue? Also, the following questions about contact with organizations were asked of all respondents, and nominations of individuals offered in response to them were included among the interaction nominations: Have you testified before legislative committees about this issue? Have you worked with an interest group or organization trying to influence public policy on this issue? Have you worked within your own organization on this issue?

a large, inclusive group because only contacts resulting from involvement in a single issue area were elicited. Had respondents been asked about interaction on several issues or more generally, each individual's named contacts would probably have represented a broader range of institutions, thereby making a finding of small, specialized groups less likely. However, this bias is counterbalanced by sociometric questions which specifically ask about contacts with persons in the federal political sectors, increasing the likelihood of finding a large, generalized group. These questions lead to the overrepresentation in the nominations of members of Congress and political appointees, who, because of their frequent involvement in a variety of issues, often are connected to persons with diverse positions and concerns.

The analysis of these sociometric data utilizes a procedure developed by Alba (1972; 1973) which is well-suited for evaluating network integration since it identifies the more cohesive parts of networks. The cohesive regions are those in which dense interconnections exist among sets of individuals. These connections may be face-to-face, as in cliques, or through short chains of interaction, as in social circles (Kadushin, 1966; 1968; Alba and Moore, 1978). Since cliques are generally face-to-face groups, they tend to be relatively small. Social circles, on the other hand, may be much larger.

The identification of social circles among political elites in the U.S. seems an appropriate base for studying the extent of their integration. To begin with, given the large size of the totality of American political elites, they could not be integrated through cliques, since these are generally quite small. In addition, social circles have other characteristics making them suitable for the study of political elite integration. Not only are they cohesive groups whose members can easily communicate and interact with one another, albeit often indirectly, but they are also usually informal groups, lacking defined leadership, whose members are drawn together by similar interests and concerns (Kadushin, 1968:692). Thus, positing a social circle as the basis for elite

integration does not require that its boundaries be visible to its members. Finally, individuals belonging to large, diverse social circles are likely to be more influential than those with more circumscribed connections because they serve as links in elite circles joining persons in high-level positions in a variety of institutions.

If circles can be identified in a network, the nature of their memberships and their relations to each other and the rest of the network are critical for assessing the extent of the network's integration. The existence of cohesive circles (or cliques) does not, in itself, guarantee that the network as a whole is integrated. By definition, an integrated network is one in which "communications" of various kinds can spread easily from one of its parts to another. Crucial then for integration are the ways in which a network's different parts are joined together. One mechanism making for integration is the existence of large circles with diverse memberships, thus drawing together individuals from different institutional areas in a society. Another is the existence of linkages joining these circles to a variety of small, otherwise disconnected cliques and circles. These linkages may take the form of overlapping memberships or direct ties between the members of different circles and cliques. By contrast, evidence of fragmentation is the existence of small, narrowly based circles or cliques which are widely dispersed, i.e., distant from each other in the network.

In specific terms, the procedure for identifying cohesive groups begins with the network of relations formed by all interaction nominations made by sample members. These relations are treated as symmetric since they represent direct communication (see Laumann and Pappi, 1973, and Laumann et al., 1977, for a similar assumption). Also, the intent to locate individuals in their interaction context or social milieu in a large network makes the identities of their connections more critical than the reciprocity or lack of it in reported connections. (From a practical point of view, symmetricizing connections allows nonsample members to be drawn into the network, an important advantage in elite studies since it is

impossible to interview all potential respondents.) Thus a link between any pair of persons is defined as present if at least one individual in the pair reports talking to the other and absent if neither named the other as an interaction partner. The network formed in this way is not limited to respondents but also includes persons outside of the sample who were named as interaction partners by at least two sample members and thus form a link between them. As a result, the full network is composed of 396 persons outside of the sample and 480 of the 545 sample members. The remaining 65 individuals in the sample are isolates who are connected to none of the persons in the network. All of the 876 persons in this network are connected through chains,⁵ but the network is not dense; of the possible direct connections less than 1% (.7%) exist.

Then, cliques and circles are identified in this network. The first step is to identify cliques, i.e., tightly knit, face-to-face groups, which are defined for my purposes as groups of at least three persons, each of whom is directly connected to all of the others. Such groups are known in graph theory as maximal complete subgraphs (Harary, 1969) and an algorithm for locating these subgraphs identified 442 such completely connected groups. The next step is to use these cliques to identify the circles in the network. Circles can be viewed as webs of intricately interlaced cliques, in which indirect communication is facilitated because circle members are also members of these highly overlapping cliques (Alba and Moore, 1978). Thus, circles can be identified by merging highly overlapping cliques. One stage in this merging process was to combine groups, i.e., cliques or emerging circles, when they differed by only one member. When all such possible merges were exhausted, 46 groups remained. However, many of these still overlapped greatly, with the membership of some almost entirely included in the membership of others. When two-thirds or more of the members of a

smaller group were also members of a larger group, the two groups were merged. Thirty-two cliques and circles emerged as the end product of this procedure.⁶

Membership in such cliques and circles is likely to be related to measures of network centrality (Freeman, 1977), even though centrality remains an analytically and, to some extent, empirically distinct concept. Centrality reflects, in essence, the number of communication paths which pass through an individual's network location. That an individual is central, however, does not mean that he or she is integrated into a group, and vice versa. For example, simply receiving nominations, a crude index of centrality, does not guarantee one's membership in cliques and circles since these are based on dense interconnections within sets of individuals. An individual nominated by 20 persons all of whom are otherwise unconnected would not be a clique or circle member, although such nominations might reflect influence of another kind. On the other hand, because choices are assumed to be reciprocal, a reasonable assumption when the link is communication, it is possible for a sample member to be a member of a group even though receiving no interaction nominations, as long as she or he names two other persons at least one of whom names the other. What distinguishes persons outside of a group from those inside it is the absence of links joining the outsider to insiders who are directly linked themselves. Cohesion, then, is not simply equatable with greater density of links among circle or clique members, but rather with the integration of each member into tightly knit groups with other members.

It is important to indicate how the method used here compares with other methods which might be employed to study elite networks. What must be highlighted in considering its appropriateness is the precise correspondence between its basic mathematical concept, the maximal complete subgraph, and conceptions of

⁵ That is, although there are obviously not direct connections between all 876, it is possible for any one of them to reach any other through one or more intermediaries.

⁶ Some of the original three-person cliques had insufficient overlap with other cliques (i.e., they shared two or more members with none of the other groups) to be merged at any stage of the procedure.

group structure relevant to the study of integration. This correspondence gives the method used here considerable superiority over other methods that fall in the general class of clustering techniques (Bailey, 1975). Although these techniques may be quite useful in gaining some view of network data, and have been used widely for that purpose, in general they are heuristic strategies with no formal relation to network or group concepts.

Novel methods of network analysis have received considerable attention in recent years (e.g., Laumann and Pappi, 1973; White et al., 1976; Burt, 1976; 1978), but in general these methods are also less appropriate for the study of network integration than is the method used here. In essence, the method by which circles are identified is based on their internal structure and guarantees that a circle's structure is cohesive. The internal structure of groups or collectivities is less critical to other methods.

Blockmodeling, which has been used to study elite networks (Breiger, 1979), identifies blocks in terms of similarities in patterns of relations or "structural equivalence." Thus, the members of a block have similar relations to others both inside and outside of the block and need not be directly or indirectly tied to each other. Even when relations of a particular type are dense within a block, its internal structure, as defined by the direct and in-

direct linkages among its members, is not well-known without further analysis. In addition, the most common methods for constructing blocks (White et al., 1976) produce blocks which are mutually exclusive and hence one important mechanism for integrating groups—overlap of their memberships—is not considered.

The methods which Laumann and his colleagues (Laumann and Pappi, 1973; 1976; Laumann et al., 1977) have used to analyze elite influence structures are based on notions of social distance. While such notions are not incompatible with the method used here, maps of social distances do not in themselves indicate regions of cohesion, and, by construction, they take the existence of a "center" for granted. The method used here to identify social circles not only identifies collectivities with an important type of internal structure, but also leaves open the possibility that they do not exist, and thus that a network is fragmented.

FINDINGS: NETWORK STRUCTURE

As stated earlier, the procedure for identifying groups located 32 circles and cliques in the connected network from the American Leadership data. This connected part contains 876 persons and the remaining 65 individuals are all isolates, connected neither to each other nor to anyone in the network. Table 2 presents

Table 2. Network Position by Sector Membership

Sector	Isolates*		Not in a Circle or Clique		Circle or Clique Member		Total Network	
	%	N	%	N	%	N	%	N
Congress	1.7	(1)	65.9	(145)	34.1	(75)	25.1	(220)
Political Appts.	4.5	(3)	56.7	(102)	43.3	(78)	20.5	(180)
Civil Service	11.1	(6)	70.8	(51)	29.2	(21)	8.2	(72)
Business	18.9	(25)	68.6	(81)	31.4	(37)	13.5	(118)
Labor	8.3	(4)	60.4	(32)	39.6	(21)	6.1	(53)
Pol. Party	37.3	(19)	69.7	(23)	30.3	(10)	3.8	(33)
Vol. Org.	1.9	(1)	71.9	(41)	28.1	(16)	6.5	(57)
Media	9.5	(6)	57.7	(41)	42.3	(30)	8.1	(71)
Academic	—	(0)	48.6	(17)	51.4	(18)	4.0	(35)
State, Local Govt.	—	(0)	75.0	(18)	25.0	(6)	2.7	(24)
Other	—	(0)	76.9	(10)	23.1	(3)	1.5	(13)
Total	11.9	(65)	64.0	(561)	36.0	(315)	100.0	(876)

* Because all isolates are sample members, these percentages are the proportion of isolates in a given sample sector; other percentages in this table are based on the network of 876.

the network locations of individuals—whether they are isolates or, if in the connected network, whether they belong to a circle or clique—by their sector memberships.

As the table shows, just over half of the 876 persons in the connected network hold positions in the three federal political sectors, while the remainder represent a wide variety of nongovernmental institutions. However, in most sectors about a third of those in the network are members of circles or cliques. If only those in the original positional sectors are considered, this proportion is much higher only among political appointees and members of the media sector. The isolates—those sample members connected to no one else—come mainly from two sectors, political party and business. In the case of the political party sector, the isolates are local leaders,

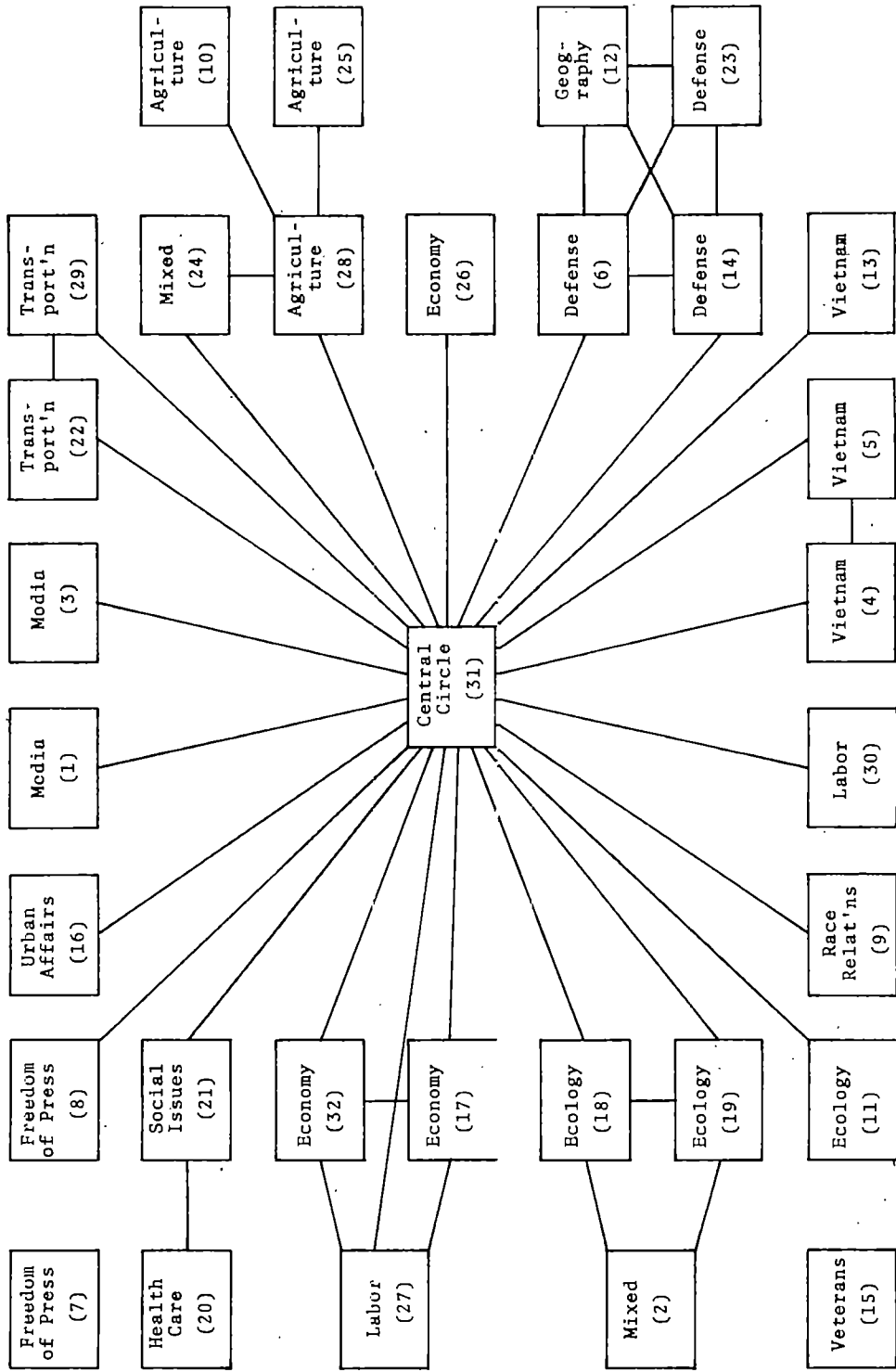
who have few, if any, ties to national elite groups. The isolated position of these local leaders is not surprising given the frequent description of American political parties as primarily local rather than national organizations. Most of the isolated business leaders are from the smaller organizations among the Fortune 800 corporations. For example, none is the head of an industrial corporation in the top 100 on the Fortune list and none is from one of the 20 largest insurance companies.

Of the 32 circles and cliques identified in the network, all but four are unified around concern with a common issue or through common sector membership, as Table 3 shows. Most of the groups are quite small. Only three have more than ten members and two of these are narrowly focused on one issue area each, ecology and agriculture. The third and most dis-

Table 3. Sector and Issue Composition of 32 Elite Circles and Cliques

Group Number	No. of Members	Density*	At Least ⅓ of Sample Members in Group Discussed This Issue	At Least ⅓ of Group Members Are in This Sector	Unifying Feature
1	3	100.0	—	media	media sector
2	3	100.0	—	—	?
3	3	100.0	—	media	media sector
4	3	100.0	defense	media	Vietnam
5	3	100.0	defense	media	Vietnam
6	5	70.0	defense	—	defense policy
7	3	100.0	freedom of press	media	freedom of press
8	3	100.0	freedom of press	media	freedom of press
9	3	100.0	social	vol. org.	race relations
10	3	100.0	economy	vol. org.	agriculture
11	5	70.0	ecology	—	ecology and geographic location
12	6	60.0	—	—	geographic location
13	4	83.3	defense	—	Vietnam and geographic location
14	7	52.4	defense	—	defense
15	3	100.0	—	civil service	veterans' affairs
16	3	100.0	social	—	urban affairs
17	3	100.0	economy	—	Dept. of Commerce
18	13	32.1	ecology	—	ecology
19	4	83.3	ecology	pol. appt.	ecology
20	3	100.0	social	pol. appt.	health care
21	6	60.0	social	pol. appt.	Dept. HEW
22	3	100.0	—	pol. appt.	transportation policy
23	5	80.0	defense	Congress	defense
24	3	100.0	—	Congress	?
25	3	100.0	economy	pol. appt.	agriculture
26	3	100.0	economy	Congress	economy
27	3	100.0	economy	—	unions
28	19	26.9	economy	—	agriculture
29	3	100.0	—	—	transportation policy
30	3	100.0	economy	labor	unions
31	227	3.8	—	—	?
32	5	70.0	economy	—	economy

* Density is given as percentage of possible ties which are present.



* Numbers in parentheses in boxes refer to group numbers listed in Table 3.

Figure 1. Overlap in Membership of Elite Cliques and Circles*

tinctive circle contains 227 persons (of whom 164 are sample members) from all sectors and discussing all issues. It is the only one whose membership is large and inclusive, crossing sector and issue area boundaries.

Thus, with one prominent exception these are narrow groups of persons with similar issue concerns. Some are further specified by ideology. For example, three of the circles concerned with defense policy consist almost entirely of well-known conservatives in and outside the government, while two other defense policy groups have only members liberal on foreign policy.

The largest group of 227 persons is quite unlike the others because its membership is so diverse; it is in no way devoted to a single issue, sector or geographic region.⁷ This circle is broad and inclusive rather than narrow and specialized. Nearly one-third (30.1%) of all persons in the sample are members of this group. While this circle's density appears low when first compared with the densities of other groups (Table 3), its membership is in fact well connected, since its members have an average of 8.7 ties with each other. Also, it is composed of nearly 350 of the original, highly overlapping cliques and over half of its members belong to at least three of the cliques which have been aggregated to form it, while nearly 70% belong to at least two of these cliques.

This circle has many bridges connecting it to the more narrowly specialized, outlying circles and cliques, as Figure 1 clearly shows. The lines in this diagram indicate overlapping membership in each pair of groups connected by a line. Although not shown here, the proportion of overlap, i.e., the proportion of all members of the smaller group who are also members of the larger one, varies from a low of 16.5% to a high of 60.0%.⁸ Most of

the smaller groups have one, or occasionally more than one, member in common with the largest circle, although most members of the small groups are connected to the largest circle indirectly (through an intermediary), if at all. The small groups rarely have common members with each other. In the few cases where smaller groups overlap, the issue area involvement of members of each is generally similar, as in the case of three groups concerned with agricultural issues.

Ease of communication, then, is particularly true of the largest circle, within which dense connections among individuals from all sectors and issue areas exist. This circle's overlap with most other circles and cliques also allows members of the issue-specific groups to communicate directly or through an intermediary with the diverse membership of that large, generalized circle. Thus, in light of its size, inclusiveness and relations with the rest of the network, I call it the "central circle." The existence of the central circle and its connections to issue-based groups indicate that political elites in the United States are integrated not fragmented.

Although the central circle draws its members from all institutional sectors in the sample, representation of the various sectors is not equal, as Table 4 shows. As in the total network, just over half of the central circle members are from the federal political sectors. Aside from business, which has the largest nongovernmental representation, each other sector contributes less than 10% of the members of this circle. A rough assessment of the degree of over- and underrepresentation of sectors in the circle can be made in the following way: if each person in the sample had an equal chance of being a member of the central circle,⁹ each sector's proportion in the sample and the circle would be equal and the ratio of these proportions would equal one. When these proportions and ratios are compared it is obvious that this equal probability model is inaccurate.

Two of the three federal political sec-

⁷ However, the central circle probably contains regions or areas reflecting mutual interests or affiliations since many of the cliques combined to form this circle appear to have bases in such propinquities. This possibility is not pursued here since it is not germane to the issue of overall group integration.

⁸ Groups with overlap greater than 66.7%, it should be recalled, were merged during the computer analysis.

⁹ Sample proportions rather than those of the network are used in this comparison because nonsample network members had no opportunity to name interaction partners and thus their likelihood of being in the central circle is less than that of a respondent.

Table 4. Sector Composition of Central Circle and Sample

Sector	Circle		Sample Members in Circle		Sample		Ratio of Circle Membership to Sample Membership
	%	N	%	N	%	N	
Congress	22.9	(52)	18.9	(31)	10.6	(58)	1.79
Political Appointees	23.8	(54)	17.7	(29)	12.1	(66)	1.47
Civil Service	5.7	(13)	6.1	(10)	9.9	(54)	.62
Business	15.4	(35)	20.1	(33)	24.2	(132)	.83
Labor	7.0	(16)	7.9	(13)	8.8	(48)	.91
Political Party	2.2	(5)	3.0	(5)	9.4	(51)	.33
Voluntary Organization	5.3	(12)	7.3	(12)	9.5	(52)	.78
Media	7.5	(17)	8.5	(14)	11.6	(63)	.73
Academic	7.5	(17)	8.5	(14)	2.9	(16)	2.97
State, Local Govt.	1.3	(3)	1.8	(3)	.9	(5)	2.00
Other	1.3	(3)	—	(0)	—	(0)	
Total	99.9	(227)	99.8	(164)	99.9	(545)	

$$\chi^2 = 67.6, 9 \text{ d.f.}, p < .001.$$

tors are overrepresented in this circle, partly because specific sociometric questions were asked about contacts with persons in the federal government.¹⁰ In spite of these questions, civil servants are underrepresented in this circle, an indication perhaps that they are rarely included in high-level, broad-based elite circles. Members of the two snowball sectors—academics and state, local government—also are overrepresented in the central circle because in these sectors only persons nominated as influential were interviewed.¹¹

While persons in every sector had some chance of being in the central circle, members of the two high-level federal

political sectors and persons in the snowball sectors are considerably more strongly represented in the circle than in the sample. Nevertheless, the central circle is a group with broad membership, representing major public and private institutions and organizations. In addition, this circle is representative of the entire sample in terms of political party affiliation, age, sex and education. Democrats and Republicans had an equal chance of membership; nearly three-fourths of the circle and sample members are over 50 years old; 90% attended college; and virtually all (about 95%) of both groups are males.

*Attributes of Central Circle Members and Nonmembers*¹²

If the network analytic procedure has successfully located a circle of influential

¹⁰ Ideally responses to these questions would be excluded. However, since they are among the first sociometric questions in the interview and respondents rarely repeated names on subsequent questions, the exclusion of these questions would lead to an equally undesirable underrepresentation of important persons in the federal political sectors in the sociometric analyses. Nevertheless, the predominance of members of Congress and political appointees is not entirely a result of these sociometric questions. Although the exact effect on the network structure of the exclusion of responses to these questions is unknown, even when these responses are removed, members of these two sectors continue to receive disproportionately more interaction nominations than persons in other sectors.

¹¹ When these ratios are computed for members of the positional sample only (i.e., excluding respondents in the snowball sample), the results are roughly the same: members of Congress and political appointees are the most overrepresented and political party officials the most underrepresented in the central circle.

¹² Specific attributes beyond formal position of network and circle members are known only for persons in the sample. The remainder of the paper is then based only on respondents. The analyses which follow are based on the entire sample, both positional and snowball. Snowball sample members were retained for two reasons. One is to retain as many individuals as possible in analyses which must be done separately within each sector. The other is to retain in the analysis individuals who may have important characteristics, since they have been identified by others as "opinion leaders." However, it can be argued that the positional sample alone has a clearer relation to a population (Erickson, 1979:281). Therefore, the following analyses were also carried out for the positional sample only, with results very similar to those reported here.

elites, this should be independently verifiable by its relationship to other measures of influence. Even though virtually all persons in this study are occupants of elite positions, those who are central circle members can be expected to be more influential than other persons in similar positions. A central elite circle can be expected to contain among its members those individuals in high-level positions who are most active in policy influence activities, visible beyond their primary organization and influential among other elites. As indicators of policy influence activities I use three items: number of federal advisory committee memberships, number of times an individual has testified before Congressional committees,¹³ number of memberships in major policy planning organizations such as Council on Foreign Relations, Committee for Economic Development, Business Council.¹⁴ Visibility is measured by level of communications output, an index¹⁵ which includes recent interviews by the press, number of magazine articles and books written, and presentation of lectures. The number of reputation nominations received from other sample members is used as an indicator of influence among other leaders.¹⁶ Because activities, influence and visibility vary considerably from one sector to another, comparisons on these items are made within a given sector. Thus comparisons of characteristics of those who are and are not members of the central circle are always made among individuals in similar elite positions.

Table 5 shows that this central circle generally does contain the more influential persons in each sector. The three policy

influence measures included here clearly distinguish between circle members and nonmembers among persons in the private sectors. With the exception of the media, a sector whose members see themselves as reporters rather than influencers of events, circle members are more active than their noncircle colleagues in serving on federal advisory committees, testifying before congressional committees, and serving as members of important policy planning organizations. Circle members and nonmembers in the three federal political sectors are not distinguished by these measures, probably because policy influence activities are part of the job of all persons in such positions. Wide visibility, as measured by level of communications output, is far higher for members than nonmembers of the central circle in nearly all sectors. This potential influence over public opinion strongly distinguishes circle members from nonmembers. With the single exception of the media, whose role in influence differs from that of others in the sample, reputation for influence is much greater among persons who are members of the central circle than among their noncircle colleagues. Overall, the most striking differences are found for business elites, with central circle members scoring significantly higher than others in this sector on all of these indicators of influence. More generally, in most sectors this central circle includes in its membership the more active, visible and influential persons in elite positions.

The final question is: Do members of this circle have higher status origins and current affiliations than their nonmember colleagues in similar elite positions? Stated differently, do high status origins or current affiliations remain an advantage even after the achievement of an elite position?

Studies of recruitment into elite positions in major public and private institutions generally find that high status or upper class origins are an advantage in the achievement of such positions (for example, Keler, 1963; Prewitt and Stone, 1973; Parry, 1969; Mintz, 1975; Dye, 1976). These origins might remain advantageous even after achievement of such a position. Upper class members of the elite often are

¹³ Number of congressional testimonies is coded as 0 = 0, 1 = 1, 2 = 2 or more.

¹⁴ Also included are the following organizations: National Association of Manufacturers, Chamber of Commerce (national and international only), National Alliance of Businessmen, Foreign Policy Association, Rockefeller Foundation, Ford Foundation, Sloan Foundation, Carnegie Corporation, Hudson Institute, Rand Corporation, Russell Sage Foundation, Brookings Institution, Conference Board, American Assembly.

¹⁵ This index is standardized with a range of 0-1.

¹⁶ Nominations on interaction questions, the bases of the network analysis, are excluded here. The number of reputation nominations received ranges from 0 to 49.

Table 5. Policy Influence Activities, Communications Output and Reputation Nominations of Nonmembers and Members of the Central Circle by Sector Membership (All Entries Are Means of Items)

Sector	Policy Influence Activity			Communi- cations Output	# of Reputation Noms.	N
	# of Fed. Advis. Committees	# of Congress. Testimony	# of Policy Plg. Orgs.			
Congress						
nonmember	.9	1.9	.1	.51*	1.4*	27
member	.8	2.0	.2	.66	4.5	31
Pol. Appt.						
nonmember	1.1	1.7	.2	.48*	.6*	37
member	1.3	1.6	.1	.62	4.8	29
Civ. Serv.						
nonmember	.8	1.3	.0*	.43*	.0*	44
member	.7	1.2	.1	.59	.4	10
Business						
nonmember	.5*	.3*	.4*	.28*	.6*	99
member	1.5	1.1	1.3	.47	3.3	33
Labor						
nonmember	1.4	1.0*	.0*	.40	.3*	35
member	2.0	1.7	.2	.50	4.2	13
Party						
nonmember	.3	.3*	.0*	.34	.0*	46
member	.7	1.3	1.0	.33	2.0	5
Vol. Org.						
nonmember	1.1*	.9	.2*	.55	.8*	40
member	2.3	1.4	.8	.55	3.5	12
Media						
nonmember	.4	.3	.2	.52*	2.4	49
member	.4	.1	.3	.69	2.9	14

* $p \leq .05$ one-tailed t-test.

Note: see text for variable descriptions; the academic and state, local government sectors are excluded because their numbers are too small for analysis.

seen as maintaining a nationwide network of informal connections throughout their lives which is generally not shared by others, including membership in exclusive private clubs, vacations at specific resorts and intermarriage (Mills, 1956; Domhoff, 1967; 1970; Baltzell, 1958; 1964). These ties are helpful in connecting one to a broad-based, nationwide network beyond that resulting simply from similar occupational or geographic locations.¹⁷ By contrast, individuals in elite positions without such connections are likely to achieve influence less as part of a broad-based network than through expertise in their occupational role.¹⁸

¹⁷ For the purposes of this paper I find the broader notion of social origins more useful than that of social class. Most occupants of top positions in major American institutions are not from upper class origins, however defined. There is a considerable range of origins, though skewed toward the upper end, among those in high-level positions. The expectation here is that the higher the status of an elite individual's origins the more likely he or she is to be part of a broad, informal elite network.

¹⁸ Compare this with Merton's (1957:414) discus-

sion of influence in Rovere, in which he suggests that monomorphic (issue or sphere specific) influence and polymorphic (in a variety of issue areas or spheres) influence have difference bases:

... the influence of the locals based largely on their personal "connections," ramifies into many and diverse spheres; influence of the cosmopolitan, more often stemming from certain types of expertness, tends to be more narrowly circumscribed.

¹⁹ Parents' socioeconomic status is composed of a four-point index of father's occupation, a five-point index of father's education and the same five-point index of mother's education; ethnoreligious origins is composed of a six-point index of generations of residence in the U.S., a three-point index of status of religion raised in, and a three-point index of status of ethnic origins; a three-point index measures high school type: elite private, other private, public or parochial; college quality is measured by a five-point index with no college lowest and Ivy League and Seven Sisters highest. All are standardized, with a range of 0-1.

Table 6. Social Origins of Nonmembers and Members of the Central Circle by Sector (All Entries Are Means of Items, Standardized With a Range of 0-1)

Sector	Parents' SES	Ethnorel. Origins	H.S. Type	College Quality	N
Congress					
nonmember	.36	.68	.21	.42	27
member	.44	.60	.11	.50	31
Pol. Appt.					
nonmember	.47	.57	.12	.52*	37
member	.48	.63	.12	.74	29
Civ. Serv.					
nonmember	.40*	.51	.02	.57	44
member	.61	.61	.11	.52	10
Business					
nonmember	.48	.70	.22	.56	99
member	.52	.65	.26	.59	33
Labor					
nonmember	.09*	.42*	0.0	.18	35
member	.30	.58	0.0	.19	13
Party					
nonmember	.46	.63	.08	.42	46
member	.38	.59	0.0	.55	5
Vol. Org.					
nonmember	.40	.43	.07	.46	40
member	.54	.63	.17	.44	12
Media					
nonmember	.54	.56	.32	.62	49
member	.41	.54	.17	.63	14

* $p \leq .05$ one-tailed t-test.

Note: see text for variable descriptions; the academic and state, local government sectors are excluded because their numbers are too small for analysis.

cited as important in later achievement (e.g., Keller, 1963; Prewitt and Stone, 1973). As Table 6 shows, social origins differ little among members and nonmembers of the central circle in any individual sector. This is not due to little variation in social origins within each sector; each contains persons from a wide variety of backgrounds. For instance, while one in five of the business leaders' fathers never attended high school, a third graduated from college. Also, although a third of the labor leaders have fathers born outside of the U.S., the same proportion are from families which have lived in this country for at least three generations. Although in the majority of cases, circle members in a given sector have slightly higher social origins, the differences are generally small and rarely statistically significant. Parents' socioeconomic status is most frequently higher for circle members than nonmembers, but even here, differences

are rarely statistically significant. Only in the labor sector are two of these differences (parents' socioeconomic status and ethnoreligious origins) statistically significant. This suggests the possibility that labor leaders, who tend to come from far lower status origins than other elites, become members of a broad, elite circle only if they share at least some of the social origin characteristics commonly found in other elite groups. Overall, however, social origins play a minor role, at most, in distinguishing members of the central circle from others in similar elite positions.²⁰

Affiliations with prestigious organizations in the private sector might be associated with central circle membership even if social origins are not. For example, membership in exclusive social clubs or sitting on numerous corporate or non-profit boards of directors might be more common among central circle members than among others in similar formal positions.

Prominent social clubs are cited by Baltzell (1958; 1964) and Domhoff (1967; 1974; 1975) as important loci of interaction among members of the upper class, especially businessmen, in large cities. According to Domhoff (1967:19), their functions are:

... to provide an informal atmosphere in which new members of the upper class can be initiated into the mores that govern gentlemanly behavior. They also provide a place in which the groundwork for major business deals can be laid, and a place in which economic and political differences can be smoothed over in a friendly manner.

In addition, Bonacich and Domhoff (1977) find considerable overlap in the membership of exclusive social clubs, major business corporations and influential policy planning groups such as the Committee for Economic Development and the Council on Foreign Relations. They contend that this overlap indicates the existence of a nationwide upper class which is

²⁰ Of course this does not mean that occupants of elite positions come from social origins similar to those of members of the U.S. population as a whole. Rather, it implies that high status origins are of no additional advantage once an elite position has been achieved.

significantly represented in not only major economic institutions but also policy groups which have important inputs to government decision making. Given the importance of upper class clubs, one would expect their members to be more likely than others in similar positions to be included in a central elite circle.

Elite individuals with broad connections and prestigious affiliations beyond their primary institutions would also appear more likely than others in elite positions to be part of a central circle. Useem (1978:226) argues that the inner group of the capitalist class consists of individuals with the broadest spans of control over major business firms. A broad span of control is achieved by persons who are executives of major corporations and also sit on several boards of directors of important firms. Similarly, though not confined to the economic sector, Perrucci and Pilisuk (1970) contend that interorganizational ties lead to broad resource networks which are less readily available to persons with prominent positions in a single organization. In a study of interorganizational ties in a midwestern community they found that persons holding executive positions in many organizations, as compared with those holding a single such position, were more involved in community issues, enjoyed greater reputations for power and tended to see one another socially (Perrucci and Pilisuk, 1970:1056). In light of these findings, it is easily argued that membership on many corporate boards or even nonprofit boards might lead to participation in a national elite circle. Persons who serve on several corporate or nonprofit boards would be more likely to be members of a central circle than their colleagues who serve on fewer or no boards of directors and who thus have narrower resource networks and/or spans of control.

Table 7 shows that central circle members are not more active in these organizations²¹ than their noncircle col-

Table 7. Membership in Social Clubs, Corporate Boards of Directors and Nonprofit Boards of Trustees of Nonmembers and Members of the Central Circle by Sector (All Entries Are Means of Items)

Sector	Social Clubs	# of Corporate Boards	# of Nonprofit Boards	N
Congress				
nonmember	.07	2.0	3.1	27
member	.03	1.8	3.2	31
Pol. Appt.				
nonmember	.08	1.8	3.1	37
member	.06	2.2	3.2	29
Civ. Serv.				
nonmember	0.0	1.2	1.7	44
member	0.0	1.2	2.2	10
Business				
nonmember	.29*	5.2	5.9	99
member	.60	6.0	7.2	33
Labor				
nonmember	0.0	1.3	3.0	35
member	0.0	1.2	4.1	13
Party				
nonmember	0.0*	2.2	4.8	46
member	.20	2.2	4.4	5
Vol. Org.				
nonmember	.05	2.2	4.8	40
member	.08	2.5	6.8	12
Media				
nonmember	.21	1.7	3.6	49
member	.36	2.1	3.3	14

* $p \leq .05$ one-tailed t-test.

Note: see text for variable descriptions; the academic and state, local government sectors are excluded because their numbers are too small for analysis.

leagues. While persons in the central circle are generally members of more nonprofit boards of trustees than similar non-circle members, these differences are not statistically significant. Social club membership does, however, distinguish circle members from others in some sectors. Only among business and media leaders is membership in a social club common, and in both of these sectors central circle members are about twice as likely to belong to an exclusive private club as their fellow sector members who are not part of this circle. In fact, three out of five business leaders in the central circle are members of a social club, by far the highest proportion of any group. Most individuals

²¹ Social club membership is coded one if respondent belongs to any upper class clubs (as listed by Domhoff, 1970:23-6) and zero if he or she is not a member of any of these clubs. The variable for corporate boards of directors reflects the number of corporate boards on which respondent has ever

served. Nonprofit boards of directors or trustees is the number of college, foundation or similar nonprofit boards of directors or trustees on which respondent has ever served.

in this sample are members of more than one board of directors and trustees, with the highest average in the business sector; nevertheless, the number of board memberships in a given sector differs little between those who are and are not members of the central circle.

Briefly, high status social origins are at most a very small advantage to those in elite positions in becoming connected to a central leadership circle. Similarly, affiliations with elite private sector organizations are generally unrelated to central circle membership. However, it should be noted that Domhoff and Baltzell are right in contending that social club membership is important for business leaders.

CONCLUSIONS

The purpose of this paper has been to examine the structure of an elite network in major American institutions as a way of assessing the extent of integration among political elites in the United States. No fragmentation of elites in different institutions or issue areas was found. On the contrary, the evidence examined here indicates that considerable integration exists among elites in all major sectors of American society. The existence of a central elite circle facilitates communication and interaction both within that large, diverse group and between its members and those in more specialized elite circles and cliques.

In a critique of elite theories, Dahl (1958) argues that elite theorists often make the error of equating a high potential for control with actual power. He contends that the formation of a ruling elite requires not only control of important resources, but also the achievement of unity and cohesiveness among its members (see Wrong, 1968, for a related argument). The structure of this network and especially the central circle indicate at least a potential for unity among these elite individuals, almost all of whom have a high potential for control through their incumbency in high-level positions. Thus the structure exists through which elites in various institutions in the U.S. could become unified in the pursuit of common goals.

Yet, in another way, the structure of the elite network analyzed here does not support a critical aspect of the contention that American elites form a cohesive ruling group acting in concert to further common interests. Implicit or explicit in much work on the structure of power in the United States (e.g., Mills, 1956; Domhoff, 1967; 1970) is the assumption that the solidarity of its ruling elite is founded in part on the upper class origins of many of its members, together with the common experiences and mutual connections such origins foster. Linked to this assumption is another: that upper class origins and their associated connections confer important advantages on the individuals possessing them in moving into the highest circles of power and influence. But the integrated network found in this study is not based on similarities in the social origins and affiliations of its members, to say nothing of upper class origins. While central circle members are more influential than others in similar formal positions, they differ little from the latter in social origins or connections to major private sector organizations. The very diversity of the central elite circle is inconsistent with the expectation that upper class origins and connections are frequently decisive in attaining significant national influence, as it is with the expectation that the solidarity of the highest circles is founded in part on shared origins and mutual upper class affiliations.

This apparent impotence of upper class origins should not be misunderstood. The role of social origins in the attainment of a position in the political elite has been well documented (Domhoff, 1967; 1970; Dye, 1976; Keller, 1963; Mintz, 1975; Prewitt and Stone, 1973). It is at the stage of attainment of an elite position that social origins serve to exclude most Americans from the opportunity to influence national policy making in significant ways. However, once such a position has been achieved, as is true of virtually all persons in this study, these factors are of little subsequent importance. While the importance attributed to social origins in the formation of elite groups is only one part of the ruling class view of American society, the findings of this study appear to

indicate the need for serious revision of this view.

Even so, it is necessary to underline that these data are limited, as are any data. Thus, they cannot disconfirm one version of ruling class theory which discounts completely the importance of social origins among members of the political elite in a society with a capitalist economy. This version, in effect, argues that bias in favor of capitalist interests is built into the American system of policy making, guaranteeing that those interests are protected by occupants of important positions, whatever their origins (e.g., Poulantzas, 1973; Miliband, 1969; Schattschneider, 1960). Data about social networks do not seem generally suited to a consideration of this possibility. In addition, one could argue that social origins and connections play a crucial role in the workings of elite circles during times of crisis or when issues of "life and death" significance for powerful groups in American society, such as its capitalist class, are under consideration.

Perhaps the most reasonable interpretation of the network analyzed here is to see it as one involving day-to-day discussions of major issues that have appeared within the public arena. In this light, the structure of the central circle—broad and inclusive, rather than narrow and exclusive—suggests that one of its main functions is the negotiation of conflict among major organized groups in American society. Crucial then are the ways in which the central circle directly and indirectly integrates leaders of a wide variety of institutions into a network capable of discussing and resolving issues of national concern.

REFERENCES

- Alba, Richard D.
1972 "COMPLT—a program for analyzing sociometric data and clustering similarity matrices." *Behavioral Science* 17:566.
1973 "A graph-theoretic definition of a sociometric clique." *Journal of Mathematical Sociology* 3:113–26.
- Alba, Richard D. and Gwen Moore
1978 "Elite social circles." *Sociological Methods and Research* 7:167–88.
- Alford, Robert
1975 "Paradigms of relations between state and society." Pp. 145–60 in L. Lindberg, R. Alford, C. Crouch and C. Offe (eds.), *Stress and Contradiction in Modern Capitalism*. Toronto: Lexington.
- Allen, Michael Patrick
1974 "The structure of interorganizational elite cooptation: interlocking corporate directors." *American Sociological Review* 39:393–406.
- Aron, Raymond
1966 "Social class, political class, ruling class." Pp. 201–10 in Reinhard Bendix and Seymour Martin Lipset (eds.), *Class, Status and Power: Social Stratification in Comparative Perspective*. 2nd ed. New York: Free Press.
- Bachrach, Peter and Morton S. Baratz
1963 "Decisions and non-decisions." *American Political Science Review* 57:632–42.
- Bailey, Kenneth D.
1975 "Cluster analysis." Pp. 59–128 in David R. Heise (ed.), *Sociological Methodology* 1975. San Francisco: Jossey-Bass.
- Baltzell, E. Digby
1958 *Philadelphia Gentlemen: The Making of a National Upper Class*. Glencoe: Free Press.
1964 *The Protestant Establishment: Aristocracy and Caste in America*. New York: Vintage.
- Barton, Allen H.
1974 "Consensus and conflict among American leaders." *Public Opinion Quarterly* 38:507–30.
n.d. "Elite interaction structures." Department of Sociology, Columbia University, New York.
- Barton, Allen H., Bogdan Denitch and Charles Kadushin (eds.)
1973 *Opinion-Making Elites in Yugoslavia*. New York: Praeger.
- Barton, Allen H., Bogdan Denitch, Charles Kadushin, Gwen Moore, R. Wayne Parsons and Carol H. Weiss
Forth- "Background, attitudes and activities of com- American elites." Bogdan Denitch (ed.), *ing National Elites: What They Think, What They Do*. London: Sage.
- Bonacich, Phillip and G. William Domhoff
1977 "Overlapping memberships among clubs and policy groups of the American ruling class: a methodological and empirical contribution to the class-hegemony paradigm of power structure." Paper presented at the American Sociological Association meetings, Chicago.
- Bonilla, Frank
1970 *The Failure of Elites*. Cambridge, Ma.: MIT Press.
- Breiger, Ronald L.
1979 "Toward an operational theory of community elite structures." *Quality and Quantity* 13:21–57.
- Burt, Ronald S.
1976 "Positions in Networks." *Social Forces* 55:93–122.
1978 "Cohesion versus structural equivalence as a basis for network subgroups." *Sociological Methods and Research* 7:189–213.

- Dahl, Robert A.
1958 "A critique of the ruling elite model." *American Political Science Review* 52:463-9.
1961 *Who Governs? Democracy and Power in an American City*. New Haven: Yale University Press.
- Denitch, Bogdan (ed.)
Forth- *National Elites: What They Think, What com- They Do*. London: Sage.
ing
- Domhoff, G. William
1967 *Who Rules America?* Englewood Cliffs: Prentice-Hall.
1970 *The Higher Circles: The Governing Class in America*. New York: Random House.
1974 *The Bohemian Grove and Other Retreats: A Study in Ruling-Class Cohesiveness*. New York: Harper Colophon.
1975 "Social clubs, policy-planning groups and corporations." *Insurgent Sociologist* 5:173-84.
- Dye, Thomas R.
1976 *Who's Running America?* Englewood Cliffs: Prentice-Hall.
- Erickson, Bonnie H.
1979 "Some problems of inference from chain data." Pp. 276-302 in Karl F. Schuessler (ed.), *Sociological Methodology* 1979. San Francisco: Jossey-Bass.
- Field, G. Lowell and John Higley
1973 "Elites and non-elites: the possibilities and their side effects." Warner Modular Publications, Module 13. Andover: Warner.
- Freeman, Linton C.
1977 "A set of measures of centrality based on betweenness." *Sociometry* 40:35-40.
- Giddens, Anthony
1975 *The Class Structure of the Advanced Societies*. New York: Harper Torchbooks.
- Harary, Frank
1969 *Graph Theory*. Reading: Addison-Wesley.
- Higley, John, G. Lowell Field and Knut Grøholt
1976 *Elite Structure and Ideology: A Theory with Applications to Norway*. New York: Columbia University Press.
- Higley, John, Desley Deacon and Don Smart
1979 *Elites in Australia*. London: Routledge and Kegan Paul.
- Hunter, Floyd
1959 *Top Leadership, USA*. Chapel Hill: University of North Carolina Press.
- Kadushin, Charles
1966 "The friends and supporters of psychotherapy: on social circles in urban life." *American Sociological Review* 31:786-802.
1968 "Power, influence and social circles: a new methodology for studying opinion makers." *American Sociological Review* 33:685-99.
1974 *The American Intellectual Elite*. Boston: Little, Brown.
- Katz, Elihu and Paul F. Lazarsfeld
1955 *Personal Influence*. Glencoe: Free Press.
- Keller, Suzanne
1963 *Beyond the Ruling Class: Strategic Elites in Modern Society*. New York: Random House.
- Laumann, Edward O. and Franz Urban Pappi
1973 "New directions in the study of community elites." *American Sociological Review* 33:212-29.
1976 *Networks of Collective Action: A Perspective on Community Influence Systems*. New York: Academic.
- Laumann, Edward O., Peter V. Marsden and Joseph Galaskiewicz
1977 "Community-elite influence structures: extension of a network approach." *American Journal of Sociology* 83:594-631.
- Levine, Joel
1972 "The sphere of influence." *American Sociological Review* 37:14-27.
- Lukes, Steven
1974 *Power: A Radical View*. London: Macmillan.
- McClosky, Herbert
1964 "Consensus and ideology in American politics." *American Political Science Review* 54:406-27.
- McConnell, Grant
1966 *Private Power and American Democracy*. New York: Knopf.
- Merton, Robert K.
1957 *Social Theory and Social Structure*. Glencoe: Free Press.
- Miliband, Ralph
1969 *The State in Capitalist Society*. New York: Basic Books.
- Mills, C. Wright
1956 *The Power Elite*. New York: Oxford University Press.
- Mintz, Beth
1975 "The President's cabinet, 1897-1972: a contribution to the power structure debate." *Insurgent Sociologist* 5:131-48.
- Parry, Geraint
1969 *Political Elites*. New York: Praeger.
- Perrucci, Robert and Marc Pilisuk
1970 "Leaders and ruling elites: the interorganizational bases of community power." *American Sociological Review* 35:1040-57.
- Polsby, Nelson W.
1963 *Community Power and Democratic Theory*. New Haven: Yale University Press.
- Porter, John
1965 *The Vertical Mosaic: An Analysis of Social Class and Power in Canada*. Toronto: University of Toronto Press.
- Poulantzas, Nicos
1973 *Political Power and Social Classes*. Trans. by Timothy O'Hagan. London: Sheed and Ward.
- Presthus, Robert
1974 *Elites in the Policy Process*. New York: Cambridge University Press.
- Prewitt, Kenneth and Alan Stone
1973 *The Ruling Elites: Elite Theory, Power and American Democracy*. New York: Harper and Row.
- Putnam, Robert D.
1976 *The Comparative Study of Political Elites*. Englewood Cliffs: Prentice-Hall.

- Rose, Arnold M.
1967 *The Power Structure: Political Process in American Society*. New York: Oxford University Press.
- Schattschneider, E. E.
1960 *The Semisovereign People: A Realist's View of Democracy in America*. Hinsdale: Dryden.
- Sonquist, John and Thomas Koenig
1975 "Interlocking directorates in the top U.S. corporations: a graph theory approach." *Insurgent Sociologist* 5:196-230.
- U.S. Congress
1978 *Interlocking Directorates Among the Major U.S. Corporations*. Staff Report to the Subcommittee on Reports, Accounting and Management of the Committee on Governmental Affairs, U.S. Senate. 95th Congress, 2nd session. Washington, D.C.: U.S. Government Printing Office.
- Useem, Michael
1978 "The inner group of the American capitalist class." *Social Problems* 25:225-40.
- White, Harrison, Scott A. Boorman and Ronald L. Breiger
1976 "Social structure from multiple networks: 1. blockmodels of roles and positions." *American Journal of Sociology* 81:730-80.
- Whitt, J. Allen
1979 "Toward a class-dialectical model of power: an empirical assessment of three competing models of political power." *American Sociological Review* 44:81-99.
- Wrong, Dennis H.
1968 "Some problems in defining social power." *American Journal of Sociology* 73:673-81.

THE OPEN AND CLOSED QUESTION*

HOWARD SCHUMAN
University of Michigan

STANLEY PRESSER
University of North Carolina

American Sociological Review 1979, Vol. 44 (October):692-712

Two quite different reasons for employing open as opposed to closed attitude questions can be distinguished. One is to discover the responses that individuals give spontaneously; the other is to avoid the bias that may result from suggesting responses to individuals. The first goal can be satisfied through careful pretesting, whereas the second requires that open questions be used in the final questionnaire. We examine both goals by means of experiments within large-scale sample surveys. A widely used closed question on Work Values is first compared with a parallel open question, and then the responses to the latter are used to reformulate the closed alternatives in new comparisons. More limited experiments on two other items also are discussed. In all cases there are large and reliable differences between question forms in univariate distributions, and in most cases important differences in bivariate relations also occur. An attempt is made to explain and reconcile both kinds of differences. The evidence suggests that if closed alternatives initially are constructed on the basis of sufficient open responses, then remaining open/closed differences may be due mainly to interviewing and coding problems with open questions, rather than to bias from closed questions.

"Since the beginning of social research," wrote Paul Lazarsfeld (1944), "students have tried to combine the value of detailed qualitative applications with the advantages of more formalized techniques which could be managed on a mass basis." Since Lazarsfeld's often cited

paper was written, the controversy over open as opposed to closed modes of inquiry in surveys has been largely resolved in practice by the victory of the closed form—no doubt because of the evident efficiency of such questions for interviewing, coding, and analysis. Despite a few exceptions, the results of social surveys today are results based mainly on what are varyingly called closed, fixed-choice, or precoded questions.¹

What is most remarkable about the triumph of closed questions is that it oc-

* Direct all communications to: Howard Schuman; Institute for Social Research; University of Michigan; Ann Arbor, MI 48106.

We are grateful to Jean M. Converse and Jacob Ludwig III for advice and help at numerous points, and to James House, Richard Kulka, Gerhard Lenski, and Charlotte Steeh for their suggestions. This paper is based upon work supported by the National Science Foundation under Grant No. Soc. 76-15040.

¹ The General Social Survey of the National Opinion Research Center (NORC) deliberately excludes open attitude questions entirely.

curred with so little direct confrontation of the two question forms. Despite the controversies among practitioners and organizations in the thirties and forties, and the endless discussions in textbooks ever after, it is difficult to locate a single rigorous experiment in which closed and open versions of essentially the same attitude question were asked of the same general population in a split-ballot or other experimental design. Argument for the superiority of one form or the other is based almost entirely on common sense and anecdotal experience.² The present report, limited though it is, seems to be one of the few systematic attempts to compare complex open and closed questions within the framework of the standard large-scale attitude survey.

PRESUMED ADVANTAGES OF OPEN QUESTIONS

When all is said and done, there appear to be two principal arguments for using open questions in attitude surveys despite their greater inefficiency. First, closed questions constructed in an *a priori* way may fail to provide an appropriate set of alternatives meaningful in substance or wording to respondents. This argument, however, leads straight to the recommendation of Lazarsfeld (1944) and others (e.g., McKennell, 1974; Moser and Kalton, 1971) that survey questionnaire design should *begin* with open questions in pilot or pretest work, then use the resulting responses as a basis for developing a meaningful set of final closed alternatives. Such sensible-sounding advice is perhaps more often preached than practiced—and

² A recent treatment by Bailey (1978:104–8) is fairly typical. It discusses in a sensible way a large number of advantages and disadvantages of one form as against the other, but cites no empirical evidence. The issue apparently is regarded as settled, since the Instructor's Manual (Kiecolt, 1978) for the book offers the following multiple-choice item for testing students, with the first alternative keyed as "correct":

Which of the following is the best type of question for gathering information about complex issues?
(a) open-ended, (b) closed-ended, (c) interval-level"

In our concluding remarks we will discuss the few empirical open/closed comparisons that we have located in the survey literature.

even where practiced is usually compromised by the small, unrepresentative, and hurried nature of much pretesting. In any case, it indicates a preliminary rather than a definitive advantage of open questions.

The second argument is that respondents are apt to be influenced by the specific closed alternatives given, and that therefore a more valid picture of respondent choice is obtained if they must produce an answer themselves. There are several versions of this argument; for example, an interest in measuring what is most "salient" to respondents, a desire to avoid "social desirability" effects, a concern to prevent mechanical choice or mere guessing. All these have in common the assumption that the superiority of open questions is inherent in the form, and cannot be provided through *any* precoded set of alternatives.

PRESENT AIMS AND DATA

Ideally, experiments comparing open and closed questions should test separately *both* advantages of open questions. We succeeded in doing this fully in only one instance, but made two other attempts where the failures are also instructive. As in our other experiments on question form (Schuman and Presser, 1977), we attempted to start from items of some demonstrated usefulness—a question on Work Values, one on Child Values, and one on the Most Important Problem facing the United States—each of which had appeared in one form or the other in an important past survey. The Work Values experiments were carried furthest, and we therefore concentrate on them here, and draw on the other two items more briefly toward the end of the paper.

Two possible kinds of open/closed differences are of interest: (1) differences in "marginal" or univariate distributions that purport to say something about the importance of one value or problem compared with another, and (2) differences in bivariate or multivariate relations, which the analyst uses in trying to discover the location and determinants of responses in a general population. Our results will be relatively straightforward where open and

closed forms do *not* differ beyond sampling error in either of these two ways. In such cases, survey investigators are free to use whichever form suits them, though cost considerations will undoubtedly push toward closed questions. The matter is more complex where differences do occur, since the issue of which form is more valid naturally arises at that point. We will not be able to provide definitive evidence on this issue, but the problem will be posed sharply and some conclusions offered.

Our data come from five cross-section surveys in which different forms of a question were administered to random halves of the same sample. The first survey, carried out in 1976 by the Detroit Area Study (DAS-76), involved face-to-face interviews with a cross-section of 896 adults in metropolitan Detroit. The other four surveys were administered by the University of Michigan's Survey Research Center (SRC), using telephone interviewing, to cross-section samples of the national population in February 1977 (N=1,203), August 1977 (N=1,218), August 1978 (N=1,144), and January 1979 (N=884). (We refer to them below by organization, year, and month, e.g., SRC-77February.) Five experiments were carried out on the Work Values item, one in each of the surveys just described. Experiments with an item about the nation's Most Important Problem appeared in DAS-76 and SRC-77February, and one dealing with a question on Child Values in DAS-76.³

³ For a full description of the DAS-76 sample, see Bianchi, 1976. The SRC samples were selected by random digit dialing, with part of the respondents chosen fresh and part recontacted from previous surveys—a design developed for use in analyzing questions on consumer behavior that make up most of the questionnaires. Since all the recontacts in SRC-77August originally had been interviewed in SRC-77February, we are able to merge their responses from the two surveys and treat these as panel data in certain analyses described below. It also seemed possible that recontacts might answer questions differently a second time than new respondents, hence we examined this in SRC-77August by comparing both marginals and relationships involving the two Work Values forms for the two subsamples: no differences approaching significance have been discovered. In other parts of our larger project we also have attempted to determine whether varia-

THE WORK VALUES EXPERIMENT

Experiment 1: DAS-76

In a study of *The Religious Factor* in American life, Lenski (1963) employed the following closed question about what people value in jobs, asking it of a sample of metropolitan Detroit:

This next question is on the subject of work. Would you please look at this card and tell me which thing in this list you would *most* prefer in a job? (MARRIED WOMEN: . . . in your husband's job?) Which comes next? (ETC. TO OBTAIN RANKING)

1. High income;
2. No danger of being fired;
3. Working hours are short, lots of free time;
4. Chances for advancement;
5. The work is important, and gives a feeling of accomplishment.

In later years this question occasionally was repeated by the Detroit Area Study (see Duncan et al., 1973), and in 1973 it was adapted by NORC for inclusion as a standard item in its General Social Survey (NORC, 1977). The NORC version differs only in that it asks all respondents about their own preferences rather than asking wives about their husbands' jobs.

We first employed the NORC version of the Work Values item with a random half of the DAS-76 sample; we administered at the same time an open version of the question to the other half of the sample.⁴

tions either in response rate or in telephone vs. face-to-face interviewing mode affected our results. Very few such effects have been found, and none relevant to the present report. It also should be noted that although our sampling involved a small amount of clustering, the design effects for most attitudes are very small (usually 1.1 or less) and we have used SRS calculations of statistics, relying on replication to assure the reliability of borderline results. All X^2 statistics are likelihood-ratio calculations, and our analyses of multiway contingency tables are based on Goodman (1971).

⁴ The closed version of the Work Values question asked for a second choice as well, but we do not deal with those results here since the open form had no similar follow-up question. Respondents did sometimes give two or more codable responses to the open form, but in these cases interviewers were instructed to ask which one represented their main preference. Occasionally this probe was omitted and such responses here are treated as missing data (code 96). An alternative and more common procedure would be to automatically code the first mentioned response. For the third item discussed below

Table 1 presents both forms of the question, the codes for the open form, and the univariate results from this first experiment.⁵ The first five categories are meant to be comparable across closed and open question forms, although in this first experiment we did not maintain exact identity in labels and there are some substantive differences to be discussed below. Additional new substantive categories were created (on the basis of preliminary review of 150 cases) to handle open responses that did not fit well the main five categories, and these will also be discussed below.

Univariate results by form. Several conclusions can be drawn from Table 1.

1. All but a tiny fraction of the closed responses fall within the five precoded categories, but nearly 60% of the open responses fall *outside* these same five categories. Thus the two questions show gross differences in the answers they elicit. Respondents on the closed form restrict themselves with apparent ease to the five alternatives offered, while respondents on the open question produce a much more diversified set of answers.

2. If we confine our attention to the five categories common to both question forms, it will be noted that the first two categories produce almost identical percentages, the third only a little discrepancy, but the fourth (Advancement) and fifth (Accomplishment) lead to major differences. (The overall difference in univariate distributions by form for the five-by-two table is highly significant: $X^2 = 46.8$, $df = 4$, $p < .001$.) Evidently, the Advancement and Accomplishment alternatives are much less often stated spontaneously than they are chosen when offered explicitly.

(Child Values), we examined those multiple response answers that had been probed in order to determine whether there is indeed a relation between the order in which responses are given and their importance as judged by respondents. Of 55 persons giving two codable Child Value responses, the probe for "most important" led 27 to pick their first and 28 their second response. Thus, order seems unrelated to importance.

⁵ Check-coding of 72 of the open responses yielded perfect agreement in 76% of the cases. All later experiments reported in this paper had agreement percentages above this level, usually in the eighties.

3. It is necessary to keep in mind—and often easy to forget—that even for the five common categories, meanings may be different between the two forms. Thus, open category 2 on Security is probably broader in content than the comparable closed category (No danger of being fired) and therefore even the apparent similarity in percentages may be misleading. One recurrent problem with open categories is that their labels and examples may not tell us enough about what actually has been coded into them. Of course, the same is true in another sense with regard to closed alternatives, since an alternative may carry different meanings to different individuals. Reification of categories is a serious hazard in both forms.

4. What of the categories that appear on the open form but not on the closed form? Two new types of responses occurred with enough frequency to justify new substantive codes. Fifteen percent of the open sample responded in terms of the job being pleasant or providing enjoyable social relations. We grouped all these types of responses into a single category (6), which turns out to be one of the larger ones in the table. A different but almost equally common kind of response is grouped under Work Conditions (7), referring both to autonomy of the job and to more concrete job factors such as safety. Along with these clearly meaningful new responses is an increase on the open form in the "Don't know," "Other," and related kinds of missing data (categories 95–99). Perhaps better interviewing would reduce these categories, but we believe that open questions tend in general to produce more missing data. Finally, the category Satisfaction (8) seemed to us at first to contain essentially tautological responses and thus to be another form of missing data, but later analysis (reported below) suggests that it represents a meaningful if vague kind of answer.

Background variables and work values: sex and education. It has been a traditional, though usually implicit, assumption of survey analysis that the form differences we have been describing do not extend to associations between an item and other variables. In order to test this assumption of "form-resistant correla-

Table 1. Work Values: Experiment I^a

Closed Question		Open Question	
This next question is on the subject of work. Would you please look at this card and tell me which thing on this list you would <i>most</i> prefer in a job?		This next question is on the subject of work. People look for different things in a job. What would you <i>most</i> prefer in a job?	
1. <i>High Income</i>	12.4%	1. <i>Pay</i>	11.5%
		Remuneration, e.g., "The money is what counts."	
2. <i>No Danger of Being Fired</i>	7.2	2. <i>Security</i>	6.7
		Steady employment and source of income, e.g., "No danger of being fired," "a good retirement plan," "insurance plan."	
3. <i>Working Hours Are Short; Lots of Free Time</i>	3.0	3. <i>Short Hours/ Lots of Free Time</i>	0.9
		Jobs that give time for other things, e.g., "The chance to be with my family."	
4. <i>Chances for Advancement</i>	17.2	4. <i>Opportunity for Promotion</i>	1.8
		Chance for advancement, e.g., "The chance to get ahead."	
5. <i>The Work Is Important and Gives a Feeling of Accomplishment</i>	59.1	5. <i>Stimulating Work</i>	21.3
		Work that makes some demand on the worker, e.g., "Work that is challenging," "varied," "creative," "work that gives a sense of accomplishment or leads to ful- fillment," "helping people," "interesting work."	
		6. <i>Pleasant or Enjoyable Work</i>	15.4
		Usually concerns pleasant social relations, e.g., "congenial people." Code here men- tion of happiness and also mention of so- cial situation of work.	
		7. <i>Work Conditions</i>	14.9
		Factors affecting how job is done, e.g., "Being able to set one's own pace," "safety," "being free from interference," "an understanding boss."	
		8. <i>Satisfaction/Liking the Job</i>	17.0
		Unspecific answers not codable in 5 or 6; e.g., "Doing what I like," "Being satisfied with the job is most important."	
		95. <i>Specific Job</i>	3.0
		"I would want to be an accountant."	
		96. <i>More Than One Codable Response</i>	1.4
		97. <i>Other</i>	2.1
8. <i>DK</i>	0.2	98. <i>DK</i>	1.4
9. <i>NA</i>	0.9	99. <i>NA</i>	2.7
	100.0%		100.0%
N	(460)		(436)

^a Carried out in DAS-76.

tions" (Schuman and Presser, 1977), we employed education and sex throughout our analysis because they are two of the most frequently used and important variables in survey research regardless of the content of the study. They also are not

redundant with each other (their association in DAS-76 is trivial and nonsignificant); they apply to all respondents (as occupation does not); and they have few missing data (unlike income). In addition, we began this research with a general hy-

Table 2. Work Values by Sex and Form: Experiment I

	Closed		Open	
	Men	Women	Men	Women
1. Pay	16.3%	9.5%	10.5%	12.2%
2. Security	8.2	6.4	10.5	3.7
3. Free Time	2.6	3.4	0.0	1.6
4. Advancement	21.9	13.6	2.1	1.6
5. Accomplishment	50.0	65.9	24.2	19.1
6. Pleasant			12.1	17.9
7. Work Conditions			13.2	16.3
8. Satisfaction			16.8	17.1
95. Specific Job			2.6	3.2
96. Multiple Responses			2.1	0.8
97. Other			2.6	1.6
98. DK	0.0	0.4	0.0	2.4
99. NA	1.0	0.8	3.2	2.4
	100.0%	100.0%	99.9%	99.9%
N	(196)	(264)	(190)	(246)

pothesis that more educated respondents would be less affected by question form variations than the less educated, on the assumption that education is associated with somewhat more self-developed and stable concepts.

Sex does show a different relation to Work Values on the two forms, as indicated by a significant three-way interaction of form, sex, and response ($X^2 = 12.2$, $df = 4$, $p < .02$). (In this and later analyses, significance tests are calculated only for categories common to the two forms, but tables show all categories.) Based on the closed form one would conclude that men are more likely to value Pay and Advancement, while on the open

form there seems to be little sex difference in these respects (see Table 2). On the other hand, on the closed form women are more apt to stress Accomplishment, with if anything the reverse being the case on the open form. Furthermore, women are more likely to give codable open responses that fall outside the five categories common to the two forms, in particular responses coded Pleasant.

When education is the background variable rather than sex, the three-way interaction is of borderline significance ($X^2 = 13.9$, $df = 8$, $p < .10$). It is more difficult in this case to pinpoint differences (see Table 3) or to be certain of their reliability, but data to be presented from later ex-

Table 3. Work Values by Education and Form: Experiment I

	Closed			Open		
	0-11	12	13+	0-11	12	13+
1. Pay	13.3%	11.9%	12.0%	14.4%	13.3%	6.2%
2. Security	11.9	5.0	5.1	5.8	5.4	9.2
3. Free Time	2.1	3.8	3.2	0.0	1.2	1.5
4. Advancement	22.4	14.5	15.2	1.4	0.6	3.8
5. Accomplishment	48.3	64.8	63.3	18.7	15.1	32.2
6. Pleasant	—	—	—	12.2	19.9	13.1
7. Conditions	—	—	—	20.9	12.0	12.3
8. Satisfaction	—	—	—	6.5	24.7	17.7
95. Specific Job	—	—	—	7.2	1.2	0.8
96. Multiple Responses	—	—	—	1.4	0.6	2.3
97. Other	—	—	—	2.2	3.6	0.0
98. DK	0.7	0.0	0.0	2.9	0.6	0.8
99. NA	1.4	0.0	1.3	6.5	1.8	0.0
	100.1%	100.0%	100.1%	100.1%	100.0%	99.9%
N	(143)	(159)	(158)	(139)	(166)	(130)

periments suggest that the trends for the Security category to differ by form are meaningful.⁶

Conclusions from Experiment I. Our comparison of open and closed forms of the Work Values question indicates that marginals for the two differ in important ways, and that the nature of associations of background variables with Work Values also differ by form. Thus it seems unwise to draw conclusions about the character of American work values from the absolute size of closed categories, as Lenski did in his 1963 volume, or even from the relative ranking of choices, as Duncan et al. (1973) did in a later replication. Advancement, to take the most striking example, differs in both percentage and rank in the open as compared with the closed results. Moreover, it is unclear which form provides the more valid representation of respondent values: proponents of open questions can hold that a value is not really important if it is seldom offered spontaneously, while proponents of closed items can argue that that form provides a fairer test by presenting the same frame of reference to all respondents. Both positions seem plausible, and it is difficult on an a priori basis to decide between them.

However, while this form comparison throws some light on the Work Values alternatives as they have generally been asked, implications for the open/closed controversy are limited by the fundamental ambiguity discussed earlier. Discrepancies by form could have come about merely because the closed alternatives fail to capture what many people want to say in answer to the question, either because the five alternatives were not developed initially on the basis of open pretesting, or having been so devel-

oped in the 1950s may no longer represent well the responses of the present. Therefore, we decided to use the open data in Table 1 as a kind of large-scale pretest to construct a new set of closed categories reflecting more adequately how people spontaneously answer the Work Values question in the mid-seventies. We also took this opportunity to clarify or otherwise amend the phrasing of certain closed alternatives, as will be described below. In taking these steps we necessarily gave greater weight, at least for the moment, to categories constructed from the free answers of respondents than from categories created a priori by an investigator.

Work Values Experiments IIa and b

In the next experiment (SRC-77February) we attempted to create a new set of alternatives as representative as possible of the open responses just discussed. This experiment (IIa) produced results that seemed important to test further for reliability and validity, and hence IIb was carried out as an exact replication a year and a half later (SRC-78August). To conserve space, the two are combined here where possible in tabular presentation and discussion, but analysis was carried out for each separately and similarities and differences in results will also be noted.⁷ Both these new

⁶ We also examined Protestant-Catholic differences by form, since the closed Work Values item was used by Lenski to study such differences. In the DAS-76 sample there is a trend on the open form for Protestants to give what Lenski considered the primary Protestant Ethic response—Accomplishment—more often than Catholics, but not on the closed form. However, the interaction is not significant and the results for the closed form differ from those obtained in earlier studies and from a later partial replication (Experiment IIb).

⁷ The '77 February and '78 August samples differ somewhat in within-household selection. The former required random selection of any adult, but the latter required selection in three quarters of the cases of heads of household only. However, our analysis indicates that none of the results reported in this section are a function of this difference. Comparison of the two surveys within form does show a highly significant ($X^2 = 20.23$, $df = 4$, $p < .001$) change in Work Values marginals for the closed form between February 1977 and August 1978: virtually all of the change involves a sharp rise in the Pay choice, with compensating smaller declines in Accomplishment and Pleasantness. Since similar trends appear on the open form, but to a smaller and nonsignificant degree, it seems likely that the difference reflects real changes in value emphasis in the national population, perhaps due to the impact of inflation, rather than to coding or other survey-related problems. (The changes are not due to sampling differences, since they occur to the same extent when only male heads are considered.) Despite these univariate differences between Experiments IIa and IIb, all bivariate and trivariate results reported in this section hold within

experiments used national telephone samples, whereas our earlier data came from a Detroit SMSA sample and employed face-to-face interviewing. It was therefore necessary to assume that the earlier results could be used as a pretest for the later study. This assumption can be tested by comparing the open percentages from Table 1 with the new national open percentages in Table 4. Although there are some differences, they are not major and none would have led to changes in the decisions we reached on the basis of the earlier DAS results.

The following changes were made in the alternatives of the closed form for Experiments IIa and b. In certain corresponding instances, labels and definitions of open code categories also were altered, as noted.

First, two alternatives were *dropped* because they had shown tiny open percentages in Experiment I: Short Hours and Advancement (3 and 4 in Table 1).

Second, two closed alternatives that had elicited substantial percentages on the open form were *added*. Pleasantness and Work Conditions (codes 6 and 7 in Table 1). Both category labels were somewhat changed in the closed version, with corresponding changes in the open code labels (see codes 4 and 3 in Table 4). Pleasantness was simply spelled out more clearly to include both the sociability and the general enjoyment responses that had been coded on the DAS open form. Work Conditions, however, was changed to focus on autonomy ("Work where there is not too much supervision and you make most decisions yourself"), which had seemed to us the main content of the previous open code; a new corresponding open code on Autonomy was created. (The label Work Conditions, however, was retained as an open code for purely physical conditions of the environment, and should not be confused with the more omnibus label used in Table 1.)

Third, three alternatives retained from the 1976 Table 1 closed form were each relabeled in order to correspond more

closely and clearly to the content of the Table 1 open categories, specifically:

- (a) "Work that gives a feeling of accomplishment" is a shortening of the alternative, "The work is important and gives a feeling of accomplishment." The latter seemed at once redundant and loaded in a socially desirable fashion by stressing "importance." We expected this change to decrease the closed percentage, bringing it closer to the percentage that spontaneously gives the Accomplishment response to the open question.
- (b) "Work that is steady with little chance of being laid off" is an expansion of "No danger of being fired." The latter seemed to us unduly limited and not to capture the real concern over job security that appears important to respondents. (However, open responses dealing entirely with fringe benefits were separated out into a new Benefits category.) The reason for this change was entirely conceptual, since the change might be expected to increase rather than decrease the open/closed difference.
- (c) "Work that pays well" is the new name of what Lenski called High Income. The new label was intended to apply more easily to all job levels, though we expected at most a slight effect on responses.

Thus all five closed alternatives are either newly developed or reworded to fit our experience with open responses in the previous survey as closely as we could manage. (The five will be referred to below as: Pay, Accomplishment, Autonomy, Pleasantness, and Security.) Furthermore, in Experiments IIa and b we were careful to use essentially the same labels for the parallel closed alternatives and open categories, and open coders were trained to think in terms of these labels.

One further refinement was added in Experiment IIa in order to check for a possible order effect on responses to the closed form. The closed version of the question actually consisted of five ran-

the two surveys separately. Therefore subsequent tables present combined results only.

Table 4. Work Values: Experiments IIa and b Combined^a

Closed Question		Open Question	
This next question is on the subject of work. People look for different things in a job. Which one of the following five things would you <i>most</i> prefer in a job?		This next question is on the subject of work. People look for different things in a job. What would you <i>most</i> prefer in a job? (Consider codes 1-5 High Priority)	
1. <i>Work That Pays Well</i>	13.2%	1. <i>Pay</i> (work that pays well) Remuneration, e.g., "The money is what counts"; salary; wages; overtime; bonuses; profit sharing.	16.7%
2. <i>Work That Gives a Feeling of Accomplishment</i>	31.0	2. <i>A Feeling of Accomplishment</i> Work that makes some demand on the worker, e.g., "Work that is challenging," "work that leads to fulfillment," "crea- tive," "helping people."	14.5
3. <i>Work Where There Is Not Too Much Supervision and You Make Most Decisions Yourself</i>	11.7	3. <i>Control of Work</i> (work where there is not too much supervision and you make most decisions yourself) Factors affecting how job is done, e.g., "Being able to set one's own pace," "being free from interference."	4.6
4. <i>Work That Is Pleasant and Where the Other People Are Nice to Work with</i>	19.8	4. <i>Pleasant Work</i> (. . . and where the other people are nice to work with) Usually concerns pleasant social relations, e.g., "Congenial people." Code here un- specific mentions of "happiness" and mentions of the social situation at the workplace.	14.5
5. <i>Work That Is Steady with Little Chance of Being Laid Off</i>	20.3	5. <i>Security</i> (work that is steady with little chance of being laid off) Steady employment and source of income, e.g., "No chance of being fired."	7.6
		6. <i>Opportunity for Promotion</i> Chance for advancement, e.g., "The chance to get ahead."	1.0
		7. <i>Short Hours/Lots of Free Time</i> Jobs that give time for other things, e.g., "The chance to be with my family."	1.6
		8. <i>Working Conditions</i> "Good lighting," "well insulated," "safe."	3.1
		9. <i>Benefits</i> Health/life insurance, retirement plan.	2.3
		10. <i>Satisfaction/Liking the Job</i> Unspecific answers not codable in 02 or 04, e.g., "Doing what I like," "being satisfied with the job is most important."	15.6
		95. Code here mentions of specific jobs, e.g., "I'd like to be a teacher," that are not otherwise codable.	3.7
		96. More than one codable response with no indication of which is most important.	4.0
7. Other	0.4	97. Other	3.6
8. DK	0.7	98. DK	2.6
9. NA	2.9	99. NA	4.4
	100.0%		99.8%
N	(1,194)		(1,153)

^a Carried out in SRC-77February and SRC-78August.

domly administered subforms—each of which began with a different alternative and continued sequentially through the other four. Thus, although not every possible permutation of the five alternatives was tried, each alternative appears first in one subsample, second in another, and so on. Cross-tabulation of the five orders by the five choices yields no sign of a primacy, recency, or other systematic type of order effect, and the overall table shows no relationship between order and response choice: $X^2 = 15.2$, $df = 16$, $p > .50$.

Form Differences in Marginals

Given a method of construction designed to maximize similar results from open and closed forms, how successful was the effort? The answer appears to be: Somewhat successful, but not by any means completely so. Examination of Table 4 yields the following results.

1. *Spread of responses.* Open responses still spread substantially beyond the five categories common to both forms, but these categories on the open form now contain 58% of all open responses as against 42% in the first experiment ($X^2 = 30.9$, $df = 1$, $p < .001$). All but one of the open common categories (and all of the closed alternatives) produce more than trivial percentages, and no other large open category (with the exception of the vague Satisfaction category) appears outside the common set of five.⁸ In sum, our five focal work values seem to have captured more adequately the spontaneous answers of respondents, though there are still a variety of small substantive and missing data categories.⁹

⁸ The one failure here is the Autonomy category, which draws only 4.6% on the open form. If the Working Conditions category is joined to it, the percentage rises to 7.7%. We were incorrect in believing that Autonomy alone would be an adequate size category.

⁹ In Experiments IIa and IIb (but not Experiment I) we instructed coders to give priority in ambiguous cases to the first five categories. However, a later recoding of 50 randomly drawn cases from Experiment IIa by a new coder not using the priority system produced only a single response where the priority instruction might have changed the assigned category, and even this one was equivocal.

2. *Effects of relabeling on closed alternatives.* Three alternatives were carried over from Experiment I, but relabeled, and two of these show marked shifts in size from the first experiment. Security goes *up* from 7% in the first experiment to 20% in the second, in line with its expansion in meaning from "No danger of being fired" to "Work that is steady with little chance of being laid off." At the same time, the Accomplishment category goes *down* from 59% in the first Experiment to 31% in the second, as might have been expected from omission of the loaded phrase, "The work is important." However, these percentage shifts could have been due to the change in the total set of alternatives offered respondents, rather than to rewording of individual alternatives. Since the possible effects of "social desirability" of wording on choice is an important issue in using closed questions, we tested the change in the Accomplishment alternative in a later experiment (SRC-79January). The closed Work Values question from Table 4 was asked to half this sample, while the other half received a question identical in all respects except that the phrase, "The work is important," was added back into the Accomplishment alternative. Contrary to prediction, this change did not produce a significant difference ($X^2 = 1.1$, $df = 1$). Thus we find no evidence, even in the case where we most expected it, for social desirability of wording to play a role in respondent choice of an alternative.

3. *Overall form differences.* If we confine our attention to the five categories in Table 4 that are common to both question forms, there is a noticeable difference for each category, with Pay yielding a higher percentage on the open form and the four others a higher percentage on the closed form. The latter might occur simply because open responses are spread over more categories, hence on each form we repercentaged the five common categories on their own base. However, the mean repercentaged form difference is only slightly smaller (7.8%) than the mean difference using the original percentages (9.0%), and the overall difference between forms is highly significant: $X^2 = 82.0$, $df = 4$, $p < .001$. Pay and Pleasantness are

given relatively more often on the open form, while Accomplishment, Autonomy, and Security are given more often when a precoded list is presented. Moreover, the rankings of the five values, which are unaffected by repercentaging, also differ between the two forms, as indicated most strikingly by the fact that Pay ranks first in frequency of response to the open question and close to last to the closed question.

Were it not for one important exception, a more general post factum interpretation of these findings would be persuasive: most respondents think in terms of material benefits, social pleasures, or absence of demands when required to provide their own work values, but are strongly attracted to "higher" aspects of work (especially the opportunity for a sense of accomplishment) when these are suggested to them. The latter would then be due more to a type of social desirability response than to genuine desire for more challenging work. However, the pattern for Security does not fit this interpretation, since security is hardly a challenging characteristic of a job, yet it shows one of the largest increases when we move from an open to a closed format. Evidently the process is not entirely—or possibly not at all—one involving social desirability of response, but has something to do with the frame of reference that a respondent brings to questions about work. The plausibility of this interpretation is increased when we consider the relation of open/closed form effects to background variables.

Relation of Form Differences to Education, Sex, and Unemployment Experience

Education. Although education is significantly related ($p < .001$) to Work Values on both open and closed forms, these relations (shown in Table 5) also differ significantly between the two forms ($X^2 = 27.5$, $df = 8$, $p < .001$). Most strikingly, the Security category on the closed form reveals a sharp negative association with education, while on the open form Security shows no clear relation to education. (The interaction of form, education

and Security vs. other common categories combined yields: $X^2 = 23.9$, $df = 2$, $p < .001$). This difference for the Security alternative is equally strong in Experiments IIa and IIb taken separately; it is even more striking when five educational levels are used instead of three; and the same trend appeared in Experiment I. Careful examination of Table 5 suggests a partial interpretation for the different relations of Security to education, an interpretation that takes account of the somewhat opposite trends for the Pay category (Pay shows a negative association with education on the open but not on the closed form). We believe that the *open* Pay category fails to distinguish two different types of responses: those referring to high income and those referring to steady income, and that this is especially true for less educated respondents who may simply verbalize something ambiguous such as "It's the money that counts." The closed form of the question allows these respondents to clarify their views, since it makes the Pay/Security distinction explicit. We thus learn from the closed form that high Pay is valued about equally at all educational levels, but that Security is stressed much more often by the least educated. Such a finding makes good intuitive sense, and leads us to hypothesize that the closed form produces more valid information than the open form about the relation of Work Values to education. This interpretation also accounts for the unexpected overall increase in Security responses on the closed form.¹⁰

Furthermore, there is another piece of evidence suggesting that the closed form may be superior to the open. Satisfaction is the one category that appears with high frequency on the open form but which we did not include on the closed form because it seemed an inferior type of response, almost a tautology (e.g., "I would prefer work that is satisfying"). However, if that

¹⁰ Form comparisons also were made using a four-category occupation variable (professional and managerial, clerical and sales, skilled workers, operatives and unskilled). Results are similar in nature and strength to the tables that employ education, leaving unsettled the extent to which the results depend on cognitive as against positional factors.

Table 5. Work Values by Education and Form: Experiments IIa and b

	Closed			Open		
	0-11	12	13+	0-11	12	13+
1. Pay	13.8%	15.9%	11.0%	20.0%	20.0%	12.8%
2. Accomplishment	11.1	28.4	44.4	6.2	8.0	24.3
3. Autonomy	8.4	8.9	15.9	3.1	3.4	6.5
4. Pleasant	24.5	23.9	14.1	14.8	15.7	13.2
5. Security	36.0	20.0	12.4	4.8	11.1	6.9
6. Advancement	—	—	—	0.0	0.9	1.8
7. Free Time	—	—	—	1.0	2.3	1.6
8. Conditions	—	—	—	3.8	4.0	2.2
9. Benefits	—	—	—	2.8	3.1	1.6
10. Satisfaction	—	—	—	10.0	14.6	19.5
95. Specific Jobs	—	—	—	8.3	3.7	1.2
96. Multiple Responses	—	—	—	3.1	4.6	4.1
97. Other	0.4	0.5	0.4	6.9	2.9	1.8
98. DK	1.9	0.5	0.2	7.2	2.3	0.2
99. NA	3.8	1.9	1.6	7.9	3.4	2.2
	99.9	100.0	100.0	99.9	100.0	99.9
N	(261)	(415)	(498)	(290)	(350)	(493)

were the case one would expect Satisfaction to relate negatively to education, as does mention of a Specific Job (category 95). Instead, Satisfaction shows a clear positive relation to education—in fact one that parallels the relation of the Accomplishment category to education on both forms. Later examination of 100 open responses from Experiment IIa revealed that a number of those coded into Accomplishment had begun by mentioning “satisfying work,” which was then elaborated to spell out the Accomplishment emphasis when probed. We now think that the open Satisfaction category consists primarily of vague and inadequately probed responses representing mainly the Accomplishment value, although occasionally some other value such as Pleasantness, and that this is clarified on the closed form when specific categories are offered to respondents. There is indeed some direct evidence that most respondents in the open Satisfaction category would choose Accomplishment on the closed form. A small subsample of respondents to the open version of the Work Values question in Experiment IIa were reinterviewed six months later and asked a three-category closed Work Values item (see fn. 3 and fn. 11). Of the 26 persons who originally were coded in the open Satisfaction category and later reinterviewed, 69% chose Accomplishment on the reinterview closed question. This is a

much higher figure than for any other group of reinterviewed respondents except those who initially gave Accomplishment itself (which was 83%). Thus people who are coded into the Satisfaction category on the open form tend to choose Accomplishment on the closed form.

Sex. Unlike Education, sex produces very similar patterns on the open and closed Work Values forms in Experiment IIa and b combined. Men are more likely to choose Autonomy and women to choose Pleasantness on each form. There is a trend for men to choose both Security and Pay to a greater extent on the open form, but the overall three-way interaction reaches only borderline significance ($X^2 = 9.1$, $df = 4$, $p < .10$) and is not replicated in data from other experiments.

Unemployment. One further variable was introduced into Experiment IIb in an effort to provide a critical test of whether the open or closed results for the Security category percentage were more valid. At the end of the interview we asked respondents whether they had been unemployed and looking for work at any point in the past five years. We assumed such an experience would be an important stimulus to giving the Security response, and that therefore the form showing a higher association between Security and unemployment could be viewed as having greater claim to validity. For example, if the open question reflects salience in the sense of

personal importance, then its Security category should show the stronger relation to experience with unemployment. Whatever the merits of this reasoning, the test failed, for actual unemployment experience (reported by a fifth of the sample) is not related to the Security response (or to any other category) on either form.¹¹

Conclusions from Work Values Experiments

We believe the initial discrepancies between the open and closed Work Values questions were partly due to the fact that the closed categories were not sufficiently developed from open responses. Alternatives were included that were not within most respondents' frame of reference for the question, while other alternatives were omitted that were important to many respondents. The revised set of closed alternatives developed for Experiments IIa and b retain quite well Lenski's original theoretical goals, yet at the same time

serve to represent more adequately and for more general purposes the work values that respondents offer spontaneously.¹²

Once so developed, however, we think the closed form of the question is superior because it separates types of responses that were often indistinguishable in the open coding (those emphasizing high income and those stressing steady income), while at the same time it merges responses (Accomplishment and Satisfaction) that the open coding tends to separate because of nonsubstantive verbal differences in expression. Whatever the advantages of the open question for assessing salience and for avoiding social desirability effects—and we have been unable to discover firm evidence that either of these advantages actually occurs—there seem to be even greater disadvantages arising from vagueness of expression by respondents, frequent failures to probe adequately by interviewers, and occasional misunderstanding by coders. All this is avoided in closed questions, where respondents are in essence asked to code themselves, with minimal intervention by third parties. In sum, while open questions seem essential for obtaining the frame of reference of respondents and for wording alternatives appropriately, once this is done we are unable to find any compelling reason to keep the open form for the Work Values question. Finally, it will be recognized that these conclusions are suggested, rather than rigorously demonstrated, by the previous results,

¹¹ Two further special analyses will be noted briefly. First, the reinterview data mentioned in fn. 3 were used to study the large number of inadequate responses (DK, NA, mentions of particular jobs only) on the open form. Of the 23 missing data cases from the original open question who were reinterviewed, over 60% chose Pleasantness on the reinterview three-category closed item and only 4% chose Pay. This is significantly different from an expected random distribution of 1/3 in each category ($X^2 = 7.7$, $df = 2$, $p < .05$), and thus it does not appear that respondents who provide missing data on the open form contribute mainly random error on the closed form.

The three-category Work Values closed question (SRC-77August) was itself part of a further experiment to determine what happened when only the three most frequently used categories from Experiment II (Pay, Accomplishment, and Pleasantness) were included in the closed form. Detailed results are not presented here because we now think that the attempt to reduce the closed Work Values item to three categories was a mistake, since it lost the important distinction between Pay and Security. However, it is worth noting that the Pay category in this experiment is negatively associated with education on the closed as well as on the open form, as would be expected once the Security alternative is eliminated and such respondents move into the Pay alternative—a demonstration that relationships to these choices are partly a function of the exact set of alternatives offered. This experiment had one other useful feature, a further test for order effects among the closed alternatives; again the results are negative ($X^2 = 2.4$, $df = 4$, n.s.).

¹² At a late stage in this research we discovered that the closed Work Values question employed by Lenski (1963) is almost identical to one used in a 1954 Consumer Behavior study by the Survey Research Center, except that the earlier version included as a sixth alternative "Income is steady" (Boulding, 1960)! Moreover, unpublished pretests for that study suggest that an alternative referring to liking "the people one works with" also was considered for inclusion at one point, possibly on the basis of earlier open interviewing. Thus in a sense our experiments have led to restoration of alternatives dropped out by previous investigators without sufficient documentation (or perhaps full awareness) of why these decisions were made. Other survey inquiries into work values also occurred during the forties and fifties (see Hyman, 1953), but they differ in wording too greatly from the Lenski item to be directly relevant to our experiments.

and are stated here in a forthright fashion for heuristic purposes.

EXPERIMENTS ON TWO OTHER QUESTIONS

In addition to the sequence of experiments on Work Values, we carried out experiments on two other questions. Neither was pursued to the same extent as Work Values, partly because of limited resources but also because problems arose that are quite instructive from the standpoint of the open/closed controversy.

Most Important Problem

The Work Values item was originally a closed question, and our experiments concerned what happened when an open version was asked. The Most Important Problem question, on the other hand, is one of the very few regularly posed in open form in surveys. It is used in both Gallup Polls and ISR Election Studies to determine the relative importance of issues for the general public. We drew on the 1974 Election Study open code results to construct a closed item with eight alternatives, and both it and a parallel open version were administered as part of the DAS-76 survey.¹³ Univariate results by form are shown in Table 6.

Of the eight common categories only three (Crime, Inflation, and Unemployment) produce appreciable proportions of respondents on the open form but for these the form comparison is quite interesting. Inflation and Unemployment yield essentially the same proportions on both forms, despite the fact that the open form spreads responses among more categories. But the Crime and Violence category attracts more than twice as many respondents when it is offered explicitly on the closed form as when it is coded from spontaneous answers to the open form. Indeed, on the closed question,

¹³ These could not be the first questions in the questionnaire, but most of the preceding questions dealt with irrelevant issues. The one prior mentioned (crime) that might have affected open responses does not appear to have done so, since it is the closed rather than the open form that produced a high crime percentage.

Crime is clearly the leading problem, while on the open form it is second to Unemployment. A review of the non-common open codes suggests that some "crime" responses may be going into other categories (9, 10, and 13 in Table 6), in which case the open question shows that Crime has a number of different meanings in the minds of respondents, whereas the single closed alternative collects these under a single rubric. However, even lumping together all these possibly relevant open categories does not eliminate the significant open/closed Crime difference, and another explanation is needed. A quite plausible though untestable one is that the reference in the open question to "in this country" discourages respondents from including crime, since crime is perceived by many as a more local problem. Although the same constraint appears in the wording of the closed question, provision of Crime and Violence as an alternative obviously legitimizes it there. Thus, paradoxically, the open form of the question produces the narrower frame of reference in this case, and of course if the explanation is correct the open question seriously underestimates public concern over crime.¹⁴

The winter of '77: unforgettable or easily forgotten? After discovering form effects for the Most Important Problem question in the DAS-76 survey, we proceeded to construct a new closed item less susceptible to these effects, though we did not attempt to change the national frame of reference. We picked from DAS-76 the five most frequently given categories of open responses: unemployment, crime, inflation, quality of leaders, and breakdown of morals and religion. These were also essentially the five most frequent closed choices, although not exactly in the same order. The five were included as the

¹⁴ We also examined three-way interactions with sex and education, finding them both significant ($p < .05$). For sex, the main source of interaction is that women give disproportionately more Crime responses on the open than on the closed form, whereas men do not. For education, the closed form shows that more years of schooling is positively related to choosing Inflation and negatively related to choosing Crime, whereas education is unrelated to the open categories.

Table 6. Most Important Problem: Experiment 1^a

Closed Question		Open Question	
Which of these is the <i>most</i> important problem facing this country at present?		What do you think is the <i>most</i> important problem facing this country at present?	
1. <i>Food and Energy Shortages</i>	6.0%	1. <i>Food and Energy Shortages</i>	1.7%
		Natural resources problems, e.g., "not enough fuel," "ecology," "overpopulation."	
2. <i>Crime and Violence</i>	34.9	2. <i>Crime</i>	15.7
		Public order problems, e.g., "courts are too easy on criminals."	
3. <i>Inflation</i>	12.6	3. <i>Inflation</i>	13.3
		High prices, e.g., "increases in the cost of living."	
4. <i>Unemployment</i>	19.7	4. <i>Unemployment</i>	19.1
		Lack of jobs, e.g., "too many out of work."	
5. <i>Decreased Trust in Government</i>	9.9	5. <i>Decreased Trust in Government</i>	3.0
		Lack of confidence in government generally, e.g., "people don't think the government will do what is right," "The people aren't behind the government."	
6. <i>Busing</i>	1.1	6. <i>Busing</i>	1.1
7. <i>Breakdown of Morals and Religion</i>	9.2	7. <i>Breakdown of Morals and Religion</i>	5.7
		Loss of traditional morality, e.g., "family disintegration," "alcohol, drugs, and sex," "turning away from God."	
8. <i>Racial Problems</i>	1.6	8. <i>Racial Problems</i>	2.4
		Majority-minority group problems.	
		9. <i>Quality of Leaders</i>	7.0
		Dissatisfaction with behavior of officials, e.g., "crooked politicians," "government officials who commit crimes."	
		10. <i>Characteristics of People</i>	4.6
		Faults and desires of individuals, e.g., "people want too much," "greed," "people don't get along with others."	
		11. <i>Characteristics of the System</i>	3.0
		Defects in social structure, e.g., "not enough equality," "the government is too big, inefficient, or unresponsive."	
		12. <i>Supportive References to Welfare</i>	1.5
		More should be done for the less well-off, e.g., "poverty," "hunger," "medical care."	
		13. <i>Unsupportive References to Welfare</i>	0.9
		Too much is done for the less well-off, e.g., "welfare fraud," "the welfare mess."	
		14. <i>National Defense</i>	0.4
		Military security	
		15. <i>Foreign Affairs</i>	0.9
		Relations with other countries.	
		16. <i>The 1976 Presidential Primaries or Elections</i>	4.6
		17. <i>Communism</i>	0.7
		Unspecific references.	

Table 6. Continued

Closed Question		Open Question	
Which of these is the <i>most</i> important problem facing this country at present?		What do you think is the <i>most</i> important problem facing this country at present?	
		18. <i>The Economy, Money Problems</i>	3.7
		Mentions of the economy not codable in 03 or 04.	
		96. <i>More than one codable response</i>	5.4
		With no indication of priority.	
97. Other	1.8	97. <i>Other</i>	3.0
98. DK	0.2	98. <i>DK</i>	1.1
99. NA	3.0	99. <i>NA</i>	1.3
	100.0		100.1
N	(436)		(460)

* Carried out in DAS-76.

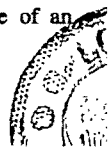
closed alternatives in a new experiment in February of 1977, with a parallel but more extended list making up the codes for an open form of the question. Among the possible DAS-76 closed alternatives *not* carried over into the new experiment was "food and energy shortages," since only eight people out of 460 had mentioned such a problem spontaneously in the DAS-76 survey.

The best-laid plans of both the country and the present investigators were disrupted when just as our 1977 telephone survey commenced, the eastern half of the United States was struck by the coldest winter in recent history. Buffalo, New York, became a symbol of other hard-hit cities, factories were shut down in a number of areas, and there were fears of widespread shortages of natural gas. During the 35 days our survey was in the field, *The New York Times* carried 62 stories on the cold spell and its implications, eight of the stories on the front page. This sudden reemergence in a new form of the energy crisis could manifest itself easily on the open version of our question: the "food and energy shortages" code recorded these concerns by making that category the second highest (22%) after Unemployment (29%) and ahead of Inflation (16%). The closed form of the same question, on the other hand, was impervious to the winter events, since only a single person (coded "Other") out of 592 respondents mentioned the energy crisis; the five fixed alternatives account for over 99% of the substantive answers

given. The results bring home an obvious and yet profound point about survey questions: almost all respondents work within the substantive framework of priorities provided by the investigators, whether or not it fits their own priorities.¹⁵

The migration of respondents on the open form into the Food and Energy code is by no means drawn in equal proportions from the five categories common to the two forms. Inflation and Unemployment retain nearly the same percentages on the open question as on the closed question. Much diminished, however, are the percentages of respondents giving Crime, Poor Leaders, or Breakdown of Morals types of responses. Unfortunately, interpretation of these differences is compromised by possible questionnaire context effects. Both inflation and unemployment were queried in the beginning of the 1977 interview, and it is conceivable that this accounts for the maintenance of their proportions, whereas the other open categories virtually disappear. Because of this problem, together with the effects of the unusual winter, we shall not present a detailed analysis of these SRC-77/February data. They do provide a dramatic lesson, however, in the differences produced by question form when external events

¹⁵ This is less true of nonsubstantive responses such as DK. As documented elsewhere (Schuman and Presser, 1978), respondents show considerable willingness to say DK when confronted with issues they know nothing about, though presence of an explicit DK raises the number appreciably.



affect answers. A historian searching opinion poll data for effects of the 1977 severe winter would find them clearly in results based on our open question. The closed form of the same item shows not a trace of the events of that winter. Conceivably an investigator could argue for using either question form depending upon the goals of the research, but it is evident that these goals had better be clear to both writer and reader, for they are not only goals but major constraints as well.

Values for children. A question on preferred values for children provided the basis for our third attempt at open/closed experimentation. But in this case we did not move beyond the initial comparison in DAS-76 because the discrepancy between open and closed distributions was too large, and the spread of open responses too great, to allow reconstruction of an adequate closed question. As Table 7 shows, 99% of the closed responses fall into categories of the original closed question (taken from Lenski, 1963), but only 9% of the open responses are accommodated by these same categories. Moreover, the modal closed response "To think for themselves" attracts 60% of the respondents on that form, but only 5% are coded into the comparable category on the open form.

Eleven additional open categories were used to handle the spontaneous open responses, not counting a relatively large (9%) residual category of miscellaneous "Other" responses. The new categories are of three kinds. At one extreme, a number of legitimate responses involving religious and moral qualities appear that are not readily covered in any way by the closed question. At the other extreme, it is easy to see how certain open categories (e.g., "To be self-reliant") could be assimilated into existing closed alternatives ("To work hard" or "To think for themselves"), though with some loss of the original meaning. Finally, the largest category of the open codes, "To get an education," seems to involve a misinterpretation of the purpose of the question by respondents; it thus illustrates the point occasionally noted (e.g., by Campbell, 1945) that open questions, lacking the additional cues of fixed alternatives, may need to be

more clearly focused than closed questions.

CONCLUSIONS

Not every closed attitude question can be asked in a parallel open form. In fact, in searching for questions useful for experimentation, we found most closed items unsuitable for transformation into open form. Of course, respondents always can be asked to discuss a general topic, and likewise it is almost always possible and useful to ask an open follow-up to a closed item, but neither of these provides a truly parallel form. It is probably no accident that the questions we settled on involved multiple nominal responses to broad inquiries about values and problems. These are the types of questions that one initially thinks of in open form, then closes largely for practical reasons having to do with ease of administration, coding, and analysis. By the same token though, they are the questions where a comparison of forms is most urgent, since the transformation typically assumes that the two forms yield essentially identical results.

Our data show that this is certainly not true in any simple way as far as univariate findings go. Every comparison we made revealed statistically significant and substantively important differences in marginal distributions between open and closed forms. Likewise, most previous experimental comparisons, though rather specialized in type of question tested, also show important differences by form: Blair et al. (1977), Dohrenwend (1965), Marquis et al. (1972), Rugg and Cantril (1944). Our own investigation adds to this previous research three examples of complex questions more typical of current attitude surveys—in one important case investigating the differences through repeated reconstruction of the closed categories. We also demonstrate that open/closed form differences extend to the nature of associations with important background variables as well; in particular, the relation of education to a distinction between "high pay" and "steady pay" in Work Values differs meaningfully depending

Table 7. Child Values^a

Closed Question		Open Question	
While we're talking about children, would you please look at this card. If you had to choose, which thing on this list would you pick as <i>the most important</i> thing for children to learn to prepare them for life?		While we're talking about children, would you please say what you think is <i>the most important</i> thing for children to learn to prepare them for life?	
01. <i>To Obey</i>	19.0%	01. <i>To Obey</i>	2.4%
02. <i>To Be Well-Liked or Popular</i>	0.2	02. <i>To Be Well-Liked or Popular</i>	0.0
03. <i>To Think for Themselves</i>	61.5	03. <i>To Think for Themselves</i>	4.6
04. <i>To Work Hard</i>	4.8	04. <i>To Work Hard</i>	1.3
05. <i>To Help Others</i>		05. <i>To Help Others</i>	
<i>When They Need Help</i>	12.6	<i>When They Need Help</i>	0.9
		06. <i>To Be Self-Reliant</i>	6.1
		Independence, e.g., "Providing for one-self."	
		07. <i>To Be Responsible</i>	5.2
		Fulfillment of one's obligations, e.g., "To be a responsible citizen," "To be a good father."	
		08. <i>To Have Self-Respect</i>	4.1
		Self-esteem or confidence, e.g., "To like oneself."	
		09. <i>To Have Respect for Others</i>	6.7
		Acceptance of rights of others, e.g., "To be tolerant of others."	
		10. <i>To Have Self-Discipline</i>	3.5
		Self Control	
		11. <i>To Be Honest</i>	7.4
		Truthfulness	
		12. <i>To Have Other Moral Qualities</i>	3.0
		General mentions of morality	
		13. <i>To Be Religious</i>	5.4
		Mentions of God or religion, e.g., "To be a good Christian."	
		14. <i>To Love Others</i>	2.0
		Mentions of love	
		15. <i>To Get an Education</i>	12.8
		16. <i>To Learn a Trade or Job Skill</i>	0.9
		17. <i>To Get Along With Others</i>	5.0
		E.g., "To live and work with others."	
		96. Multiple Responses: No indication of most important	16.1
07. Other	0.0	97. Other	9.3
08. D.K.	0.0	98. D.K.	1.3
09. N.A.	1.8	99. N.A.	2.0
	100.0		100.0
	(436)		(460)

^a Carried out in DAS-76.

upon which form of the question—open or closed—is used.¹⁶

¹⁶ The one previous report of such interactions that we have located is by Robinson and Rohde (1946). However, when their tables are reanalyzed using recently developed statistical techniques (Goodman, 1971), none of the reported three-way interactions approaches significance.

It is not possible at this point to draw definitive conclusions about when open/closed differences will occur or whether one form will always be more valid than the other. But our findings do suggest several propositions that are at once tentative conclusions and hypotheses for future research.

1. Form differences will be minimized if investigators begin with open questions on large samples of the target population and use these responses to construct closed alternatives that reflect the substance and wording of what people say spontaneously. This point is so obvious as to be embarrassing to state, yet it is probably violated in survey research more often than it is practiced. Of course, there may be times when an investigator deliberately wishes to exclude frequently given alternatives or add others, but this should be stated and justified explicitly. Otherwise we risk having respondents confirm our own frame of reference without even being aware of it. The "energy shortage" result is a simple and dramatic example of this phenomenon, but the omission of Pleasantness as a possible closed Work Values alternative from the original Lenski (1963) question is perhaps a more important and realistic instance.

2. Where open and *properly constructed* closed forms of questions do differ, it appears that in at least some cases the latter may be more valid—where valid means correctly classifying respondents and correctly describing relationships. For the Work Values question, the reconstructed closed form allows an important distinction to emerge that is obscured on the open form, and shows the distinction to have construct validity in terms of other relationships. In addition, the closed form eliminates a large open category that seems in retrospect to have been due more to vagueness of response than to substantive distinctiveness. In the Most Important Problem question, the open form probably limits some respondents to a frame of reference not intended by investigators, while just the opposite happens in the open form of the Child Values question, where the largest open category ("To get an education") is outside the desired frame of reference. Closed forms of the two questions avoided both these problems. And of course there are many missing data (e.g., multiple responses) to open questions that are eliminated entirely by adequate closed versions. Yet it will not do to say that closed forms, even where carefully constructed on the basis of open responses, are generally superior.

Table 8. Mean Percentage Differences for Common Categories by Education^a

Experiment	Education		
	0-11	12	13+
Work Values I	9.7	14.2	4.9
Work Values II	12.5	8.1	6.0
Work Values III ^b	12.7	12.5	8.0
Important Problem I ^c	14.4	6.8	7.2
Child Values	16.1	10.0	4.7

^a Using common categories only, we calculated absolute percentage differences between the two forms for each category and then averaged these to give the figures in this table.

^b This experiment is described in fn. 11.

^c The second Important Problem experiment was not included in this analysis because of the likelihood of strong context effects, as noted in the text.

Certain important form differences for the Child Values question have not been successfully interpreted, and the issue of whether adequate closed questions are always more valid remains unsettled and in need of further research.¹⁷

3. Some important findings do remain constant across form. For example, Accomplishment as a Work Value is positively related to education in all of our experiments, despite differences in form, in wording, and in the number and nature of the other alternatives present. There is thus a robustness to the relationship that simply does not hold for other associations equally interesting and equally significant statistically in particular analyses. An investigator should probably feel more confidence in the meaningfulness of such a stable finding.

4. Open/closed differences appear to be smaller for some parts of the population than for others, in particular for more

¹⁷ What little evidence exists in past literature on the issue of validity is mixed. The strongest such study is by Blair et al. (1977) and provides fairly persuasive evidence for the superiority of the open form in eliciting quantitative reports of drinking and sexual behavior. Two of the coauthors of that study summarize elsewhere certain circumstances in which they believe open questions to be generally more valid (Sudman and Bradburn, 1974). On the other hand, Marquis et al. (1972) present evidence in favor of closed questions, though their results are based on a special factual situation. Finally, Dohrenwend (1965) offers results indicating that closed questions are superior in certain respects, but her investigation involved an experimental situation remote from typical attitude surveys and does not seem to have standardized the questions employed.

educated as against less educated respondents (see Table 8). This is largely due to the fact that the least educated bulk disproportionately large in open missing data categories, and it is these responses that must, in a sense, be redistributed when the closed question is asked. Nevertheless the effect is real in terms of creating a greater gap between open and closed results for less educated respondents than for the more educated.

Finally, since our results fail to provide strong support for the superiority of open questions, the implication may seem to be that after sufficient pilot work an investigator can rely exclusively on closed items. But we think that total elimination of open questions from survey research would be a serious mistake. For one thing, open questions may be needed to document the *absence* of a type of response, as in Stouffer (1955) and Converse (1964), though as we have seen, care must be taken that the wording of the open question does not subtly prevent the emergence of relevant types of responses. Open "why" questions can also be especially useful as follow-ups to important closed questions, providing insight into why people answer the way they do (see Crutchfield and Gordon, 1947; Schuman, 1966; 1969). Open questions also are needed where rapidly shifting external events can affect answers, or indeed over longer stretches of time to avoid missing newly emergent categories. And of course in some situations the set of meaningful alternatives is too large or complex to present to respondents—a serious problem with telephone surveys where cards are not possible.

Furthermore, as survey data come to provide the material for history, open interview responses take on increasing value because they allow future social scientists to create in retrospect new categories undreamt of by the original investigators—to put, in effect, new questions to one's predecessor's respondents. Consider that remote ancestor of present-day research, the Domesday Survey, carried out in 1086 with William the Conqueror the Principal Investigator. The new king was less interested in the attitudes of his subjects than in their holdings;

but supposing he had obtained a representative sample of public opinion in the late eleventh century, we would find its value considerably greater if what were preserved were the spontaneous thoughts and language of men and women of those days, rather than simply choices among alternatives A, B, and C. The same will not be less true in our own time, and investigators with a concern for the future should make certain that more than numerical codes are transmitted to social scientists of the next decade, century, or millenium.¹⁸

REFERENCES

- Bailey, Kenneth D.
1978 *Methods of Social Research*. New York: Free Press.
- Bianchi, Suzanne M.
1976 "Sampling report for the 1976 Detroit area study." Unpublished report, Detroit Area Study, University of Michigan.
- Blair, Edward, Seymour Sudman, Norman M. Bradburn and Carol Stocking
1977 "How to ask questions about drinking and sex: response effects in measuring behavior." *Journal of Marketing Research* 14:316-21.
- Boulding, Elise
1960 "Orientation toward achievement or security in relation to consumer behavior." *Human Relations* 13:365-83.
- Campbell, Albert A.
1945 "Two problems in the use of the open question." *Journal of Abnormal and Social Psychology* 40:340-3.
- Converse, Philip E.
1964 "The nature of belief systems in mass publics." Pp. 206-61 in D. E. Apter (ed.), *Ideology and Discontent*. New York: Free Press.
- Crutchfield, Richard S. and Donald A. Gordon
1947 "Variations in respondents' interpretations of an opinion poll question." *International Journal of Opinion and Attitude Research* 1:1-12.

¹⁸ This assumes that responses are recorded with substantial accuracy, of course, and that these raw responses are available for later recoding. As Duncan et al. (1973:36) discovered, use of earlier open coding results can be quite misleading. Even where the goal is only to study social change via exact replication, it is important for all sets of responses to be coded by the same set of coders (if possible blind to the sources of the responses), lest changes in coding practices be mistaken for changes in respondent attitudes. New methods of electronic recording of verbal responses should make storage much easier in the future.

- Dohrenwend, Barbara Snell
1965 "Some effects of open and closed questions on respondents' answers." *Human Organization* 24:175-84.
- Duncan, Otis Dudley, Howard Schuman, and Beverly Duncan
1973 *Social Change in a Metropolitan Community*. New York: Russell Sage.
- Goodman, Leo A.
1971 "The analysis of multidimensional contingency tables: stepwise procedures and direct estimation methods for building models for multiple classifications." *Technometrics* 13:33-61.
- Hyman, Herbert H.
1953 "The value systems of different classes: a social psychological contribution to the analysis of stratification." Pp. 426-42 in Reinhard Bendix and Seymour Martin Lipset (eds.), *Class, Status and Power*. Glencoe: Free Press.
- Kiecolt, Jill
1978 *Instructor's Manual* (to accompany Kenneth D. Bailey's *Methods of Social Research*). New York: Free Press.
- Lazarsfeld, Paul F.
1944 "The controversy over detailed interviews—an offer for negotiation." *Public Opinion Quarterly* 8:38-60.
- Lenski, Gerhard
1963 *The Religious Factor*. Garden City: Anchor.
- McKinnell, Aubrey C.
1974 *Surveying Attitude Structures*. Amsterdam: Elsevier.
- Marquis, Kent H., James Marshall, and Stuart Os-kamp
1972 "Testimony validity as function of question form, atmosphere, and item difficulty." *Journal of Applied Social Psychology* 2:167-86.
- Moser, C. A. and G. Kalton
1971 *Survey Methods in Social Investigation*. London: Heinemann.
- National Opinion Research Center
1977 *Codebook for the 1972-77 General Social Surveys*.
- Robinson, Duane and Sylvia Rohde
1946 "Two experiments with an anti-Semitism poll." *Journal of Abnormal and Social Psychology* 41:136-44.
- Rugg, Donald and Hadley Cantril
1944 "The wording of questions." Pp. 23-50 in H. Cantril (ed.), *Gauging Public Opinion*. Princeton: Princeton University Press.
- Schuman, Howard
1966 "The random probe: a technique for evaluating the validity of closed questions." *American Sociological Review* 21:218-22.
- 1969 "Free will and determinism in public beliefs about race." *Trans-Action* 7:44-8.
- Schuman, Howard and Stanley Presser
1977 "Question wording as an independent variable in survey analysis." *Sociological Methods and Research* 6:151-70.
- 1978 "The assessment of 'no-opinion' in attitude surveys." Pp. 241-75 in Karl F. Schuessler (ed.), *Sociological Methodology 1979*. San Francisco: Jossey-Bass.
- Stouffer, Samuel A.
1955 *Communism, Conformity, and Civil Liberties*. Garden City: Doubleday.
- Sudman, Seymour and Norman Bradburn
1974 *Response Effects in Surveys*. Chicago: Aldine.

ERRATA

■ Errors occurred in the article, "Class Power and State Policy" (ASR, June, 1978) by Alexander Hicks, Roger Friedland and Edwin Johnson. In Table 2 on page 30 inaccurate correlations appeared for the following pairs of variables: X_6 and Y_4 (.59); X_7 and X_4 (.45); X_6 and X_7 (.23); Y and X_6 (.47). The correct correlations are: X_6 and X_4 , .45; X_7 and X_4 , .59; X_6 and X_7 , .21; and for Y and X_6 , .48.

■ In the article, "Making It in America" (ASR, June, 1979) by Stanley Lieberman and Donna Carter; the occupational materials on page 365 should have appeared under Table 4 (page 359) as part of the second footnote to that table.

THE ANALYSIS OF OPPOSITIONAL STRUCTURES IN POLITICAL ELITES: IDENTIFYING COLLECTIVE ACTORS*

EDWARD O. LAUMANN

University of Chicago

PETER V. MARSDEN

University of North Carolina, Chapel Hill

American Sociological Review 1979, Vol. 44 (October):713-732

In this paper we propose a theoretical rationale for characterizing oppositional structures in political elites. Concepts currently used in the study of political conflict suffer from serious theoretical and empirical deficiencies. We therefore introduce the concept of a *collective actor*, which we treat as an elementary analytic unit in the study of conflict structures in elite systems. We then develop a set of spatial models describing the alternative forms of oppositional structure that have received attention in the literature. Finally, we attempt to demonstrate the utility of our approach in a comparative analysis of two quite different community elite systems.

In this paper we propose a theoretical rationale for characterizing oppositional structures in political elites. Concepts currently used in the study of political conflict suffer from serious theoretical and empirical deficiencies. To circumvent some of these difficulties, we introduce the concept of a *collective actor*, which we treat as an elementary analytic unit in the study of conflict structures in elite systems. We then show that when considered across a range of issues, overlapping memberships of collective actors may be used to describe the nature of the cleavage structure within a system of collective action (cf. Coleman, 1973; Marsden and Laumann, 1977). Finally, we present one method of operationalizing the collective actor concept, and illustrate its application with data from two community leadership studies.

We have discussed elsewhere various

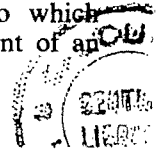
conceptions of structure in community decision making (Laumann et al., 1977:595-8; see also Hunter, 1953; Dahl, 1961; Rosē, 1960; Walton, 1966; Clark, 1968a; and Aiken, 1970). The element common to all of these conceptions is an assumption that regularized linkages of communication among elite members are required for the effective resolution of local issues. Accordingly, virtually all recent work in this area has been concerned with analyses of social networks in which decision makers are implicated (Laumann and Pappi 1976; Burt, 1977; Marsden and Laumann, 1977; Alba and Moore, 1978; Breiger and Pattison, 1978; Moore, 1979; Breiger, 1979). The trend toward a network approach in this area is, on balance, a useful one. It sometimes has resulted, however, in the uncritical transfer of concepts from other substantive fields into a setting for which they are ill adapted. Before introducing the concept of a collective actor, we will examine these concepts and their connotations.

* Direct all communications to: Edward O. Laumann; Department of Sociology; University of Chicago; 1126 E. 59th St.; Chicago, IL 60637.

Order of authorship is alphabetical. A previous version of this paper was read at the International Conference on Mathematical Approaches to the Study of Power, Bad Homburg, West Germany, March, 1978. Writing was supported by a grant from the National Science Foundation, NSF SOC77-26038. We appreciate the assistance of Lynn Appleton, James Burk, and Margaret Troha in performing the data analysis and in commenting on previous drafts of the manuscript. We also wish to acknowledge our debts to the following colleagues who have provided criticism and suggestions: Charles Bidwell, Charles Cappell, Terry N. Clark, James S. Coleman, Noah Friedkin, Morris Janowitz, Franz U. Pappi, Arthur Stinchcombe, Christopher Winship, and Rolf Ziegler.

Concepts in Use for the Study of Political Conflict

Six major concepts have been proposed as elementary units for the analysis of political conflict: cliques, social circles, quasi-groups, action sets, factions, and coalitions. Each of these differs from the others in certain important respects. They, however, can be ordered along a continuum giving the degree to which each is oriented to the attainment of ap



explicitly stated goal. A second feature that distinguishes the six concepts is the degree to which the network characteristics of the elementary unit are stressed.

The concept of *clique* has been the starting point for many efforts to adapt network approaches to conflict analysis. A clique is a set of persons directly linked to one another via mutual relationships (Alba, 1973; Burt, 1978). In terms of graph theory, a clique is a maximally complete subgraph (Luce and Perry, 1949). The clique concept was developed by social psychologists interested in well-defined small populations of actors, such as students living in dormitories, soldiers in barracks, or workers on an assembly line. Such persons typically are involved in recurrent informal interactions, often involving deeply felt interpersonal sentiments. Drawing on experimental research demonstrating the effects of group norms on perception (Sherif, 1936; Asch, 1951) as well as observational studies showing the effects of social pressures within intimate contexts (Whyte, 1943; Newcomb, 1961), studies have argued that dense communication networks engender similarity of perceptions and opinions among their members. Applied to elite analysis, the implication of this is that linkages of friendship or communication among elite members also breed interest similarity (see Domhoff, 1970:chap. 4).

The difficulty here is that the contacts that elite members have with one another serve a variety of diverse functions. Some of them may be used to build or maintain social solidarity among persons committed to a particular political stance. A community elite, however, may be regarded as an informally elaborated institution that provides a means for the articulation and resolution of conflicting claims for collective action (Laumann and Pappi, 1976). Contacts among its members therefore provide channels for bargaining and negotiating with opponents to reach broadly acceptable outcomes, and are not merely a device for the organization of conflict groups. If the clique concept were to be used as a general definition of oppositional groups within elites, we should expect to find that persons holding op-

posed preferences would exhibit strong tendencies to avoid one another in constructing their social networks. Our empirical investigations bearing on this point, however, do not reveal such tendencies (Laumann et al., 1977:606-13).

A community elite is not a social group confined within a circumscribed physical setting, as are most of the groups studied in the small-groups tradition. The theoretical and empirical differences contrasting elite systems with naturally occurring or experimentally constructed small groups suggest that interactions of elite members will result in loosely-knit, ramifying networks. The linkages in these networks may involve only modest levels of affect, and often will include important instrumental components. This suggests that these linkages are more likely to result from preexisting interest similarity than to be a foundation of common interests (see Laumann et al., 1977:614). Actors in leadership positions construct their personal networks purposefully, targeting on others whom they perceive both as resourceful and as likely to share their own issue preferences. To achieve their ends, however, they must not neglect the need to maintain contact with elements of the opposition.

Thus, conceiving of the oppositional structure in terms of cliques tends to carry some inappropriate theoretical overtones having to do with the expressive nature of interpersonal attachments among clique members. Furthermore, to analyze networks without respect to outcome preferences is to risk confounding ties oriented to conflict resolution with those oriented to the organization and mobilization of support.

Perhaps in response to some of these difficulties with using the clique concept in analyzing elite structures, Kadushin (1968:esp. 692) proposed the concept of a *social circle* (see also Alba and Moore, 1978).¹ The definition of a social circle

¹ A related notion is Kadushin's (1976) concept of a power and influence circle. One additional reason for modifying the definition of oppositional groups in terms of cliques is that meaningful groups meeting all the defining characteristics of cliques rarely are discovered empirically (see Sonquist and Koenig, 1976; Alba and Moore, 1978).

specifies that members must be sociometrically linked with one another, but does not require that all pairs of members be *directly* linked as the clique concept does.² Thus, rather sparse networks may qualify as social circles. Additionally, it is required that members of a social circle share common political or cultural interests, broadly conceived.

The notion of a social circle is a useful step toward an appropriate definition of oppositional units, in that it relaxes the stringent criterion of dense connectedness required of cliques and takes some account of concerns that might serve as a basis for disputes among elite members. It is not fully appropriate for analyzing conflict, though, because Kadushin explicitly specifies that a social circle has no clearly defined goals. The "interests" to which the concept refers are evidently not specific outcome preferences, but instead vague expressions of concern about certain issue domains (e.g., foreign policy, cultural affairs), combined with a willingness to engage in discussions pertinent to these topics (see Barton et al., 1973; Kadushin, 1974; Alba and Kadushin, 1976). Social circles are therefore more descriptive of the organization of particular issue arenas (Clark, 1968a:67-72; Freeman, 1968) than of the contending oppositional groups *within* these arenas.

Two other concepts, the *quasi-group* and the *action set*, are offered in the anthropological literature. Mayer (1966) develops two types of quasi-groups. One type, the interactive quasi-group, refers to a purposively constructed egocentric network, and hence cannot be used in the analysis of group structure. The second type, the classificatory quasi-group, is essentially a category of persons sharing common interests without any definite social organization. Both interests and social organization, in our view, need to be considered in the analysis of oppositional structures.

² Alba (1973) proposed another concept, the *n*-clique, that also relaxes the connectedness criterion for cliques, and substitutes the requirement that persons in an *n*-clique be linked to one another via directed paths of, at most, *n* linkages. In later work, however, this concept is discarded in favor of the social circle (Alba and Moore, 1978:178).

The idea of an action set (cf. Boissevain, 1974:170-205; Aldrich, 1979:280-1, 316-21) is somewhat more promising. An action set is a group of actors who form a temporary alliance in pursuit of a strictly delimited purpose. This concept directs attention both to the interconnectedness of actors and to the *active participation* of members of the action set in realizing a common goal.

Two final concepts, *faction* and *coalition*, are most commonly employed by political scientists. Key (1949:16) defines a faction

to mean any combination, clique, or grouping of voters and political leaders who unite at a particular time in support of a candidate. Thus, a political race with eight candidates will involve eight factions of varying size. Some factions have impressive continuity while others come into existence for only one campaign and then dissolve.

This usage of the term has the virtue of directing attention to conflicting, specific goals toward which actors are oriented, but it does not explicitly characterize the social organization of the group. It also is restricted, by this definition, to the study of electoral opposition.

Some similar comments pertain to the term *coalition*. There is no consensus on a rigorous definition of this concept (Gamson, 1968), but it typically emphasizes the rationalistic calculation of advantage by individualistically oriented actors in legislative or electoral behavior. Riker's (1968:524) definition illustrates:

[A coalition is] . . . a group of people who come together (usually on a temporary basis) to obtain some end. Typically, a coalition has been regarded as a parliamentary or political grouping less permanent than a party or a faction or an interest group.

Thus, coalitions involve only those actively engaged in pursuing their objectives, at least insofar as each person must cast a vote. They include only actors sharing common interests, though coalition formation also may be constrained by strategic considerations. For instance, the size of a coalition may be limited to the minimal number of members required for success, so that payoffs to members from effective joint action can be maximal (Riker, 1962). In any case, the resultant

coalitions are more in the nature of voting blocks or categories than groups having a definite social organization.

If the clique concept exaggerates the importance of personal relations for the construction of common interests for elite members, the ideas of coalition and faction err in the other direction by ignoring or minimizing the social structural conditions for group formation among those having shared objectives. Of course, the delimited physical setting in which legislators operate is one that guarantees contact between even the most improbable coalition members. In addition, the formal nature of membership in such collectivities makes it certain that all actors in a legislature are aware of potential partners for coalitions. It is thus arguable that the importance of specific communication channels can be deemphasized in analyzing coalition formation within legislatures or other formally constituted deliberative bodies. This is a very special case, however, and in other circumstances, elite members may be geographically and socially dispersed. In fact, even membership in an elite system or activation on a specific issue episode may not be sharply defined. For these reasons, we see a need for a new concept for the study of elite cleavage structures.

Collective Actors As Units in Oppositional Systems

In our survey of concepts used in the study of political conflict, three major components of the various definitions have been identified: (1) degree of social *cohesion* among group members; (2) the degree to which a well-defined *preference* or purpose is shared among group members; and (3) the degree to which group members *actively participate* in pursuing this purpose. We have found the concepts of clique and social circle inadequate because they focus on social cohesion to the exclusion of preference. We have criticized the concepts of faction and coalition because, while drawing attention to preferences and activity, they largely ignore the sociological question of internal group structure.

Clearly any adequate definition of a

conflict group must include both the elements of cohesion and preference. The crucial question for us is whether it also should include the third component listed above, participation. Note, first, that a convenient feature of elections and legislatures, the sorts of systems most frequently studied by political scientists, is that there is a clear, unambiguous act, voting, that signifies participation (cf. Stinchcombe, 1975:558). The circumstances involved in the study of other elite systems are quite different. Instead of the simultaneous statement of participation and preference through the vote, we are concerned with a more diffuse process of influence mobilization and persuasion. Diverse acts, such as public expressions of support in the mass media, solicitation and donation of funds, or organization of ad hoc committees, as well as legally authoritative acts like voting or the issuing of administrative directives, may have substantial consequences for the outcome of a contested issue. Not all of these acts will necessarily be defined as participation by the actors themselves or be regarded as legitimate by the community at large.³

We contend that there is a fundamental ambiguity to the notion of participation in an influence system. There is not always a common "metric" in terms of which acts of "participation" can be defined and rendered comparable to one another (cf. Parsons, 1969). Instead, the nature of an influence process in an elite system is one in which the informal networks linking individuals serve as channels by which opinions are privately transmitted, or as devices through which supporters of a given position come to know the extent of their "latent" support among other leaders. Furthermore, to specify active participation as a criterion of membership in a conflict group is to bypass one of the most crucial questions having to do with collective action: the question of the condi-

³ For instance, an industrialist who wishes to influence a zoning decision because of its bearing on his firm might be ill-advised to identify himself publicly as a member of a coalition which included the chairman of the zoning commission. Other less overt acts might be far more effective toward the achievement of his objective.

tions and processes which produce active participation (Olson, 1965).

For the above reasons, we propose the following definition of a *collective actor*, a new concept that is to serve as an elementary analytic unit for the oppositional structure of a collective decision-making system. A collective actor is defined as the set of all members in an elite decision-making system who (1) share an outcome preference in some matter of common concern, and (2) are in an effective communication network with one another. A collective actor thus constitutes the *maximal opportunity structure* for coalition formation on a given issue.⁴

Several observations about this definition should be made. First, we explicitly intend to include in a collective actor only those persons who subjectively share a preference for a specific issue outcome. We, however, do not require that *any* of them be "actively involved" in the resolution of the issue. It is possible that no member attempts to exert influence in any fashion. The collective actor, in this case, would be a latent group, since its members would possess two necessary but not sufficient conditions for collective action, shared preferences and preexisting communication channels. The interesting question, of course, suggested by this feature of the definition is that of the conditions under which the persons in a latent group will in fact become activated. Certain attributes of a collective actor, such as size, density of communication contacts, or resources controlled by its members, might be shown to influence the likelihood and character of its participation in a controversy.

A second observation is that in defining an "effective communication network," we require that all members of the collective actor be mutually reachable but not necessarily adjacent. We thus relax one of

the stringent criteria for defining a clique in favor of a more flexible condition, like that used in defining a social circle.

Because of the requirement of shared preference, membership in a collective actor is mutually exclusive of membership in any other collective actor on that issue. It is not, however, necessarily exhaustive; influentials who are isolates in a network or hold no outcome preferences for a given issue will not be members of any collective actor for that issue.

Collective actors thus differ in important theoretical respects from other concepts extant in the literature. Cliques, conceived as solidarity groups with enduring interpersonal commitments, may or may not be coincident with collective actors. This is so because collective actors, unlike cliques, are constructed with explicit reference to a commonality of interest. Well-established cliques with strong interpersonal bonds can tolerate situations in which some of their members agree to disagree on a given issue. If our approach is utilized, however, such circumstances would mean that clique members who disagree on an issue would be assigned to opposing collective actors.

It is more difficult to specify the relationship between a collective actor and a coalition, since there is not a generally accepted definition of the latter term. If we accept the definition of coalition given above, in terms of shared preferences, mutual access for communicating intentions, and universal activation, then collective actors are coextensive with coalitions when all of their members are activated. When there is less than complete participation, members of a coalition are a subset of the members of a collective actor. The correspondence between collective actors and coalitions also depends on the way in which the collective actor concept is operationalized. To the extent that the issue around which a group forms is of broad scope and of enduring concern, and to the extent that linkages in the communication network involve stable interaction as opposed to issue-specific discussion, the collective actor comes to appear as a more or less permanent feature of an oppositional structure. It thus moves away from the temporary alliance

⁴ Cook (1977:69) uses the term *opportunity structure* to refer to an egocentric network of possible exchange relations. Our usage differs from hers in two important ways: it describes a collectivity in relationship to an issue, and it refers to a collectivity as a whole, not to a network centered on an individual.

of convenience implicit in the concept of coalition.

Finally, we should note that collective actors do not correspond to the "blocks" or "structurally equivalent positions" recently suggested as analytic units for social networks (White et al., 1976; Burt, 1977; 1978). Collective actors do include one central feature of oppositional roles, shared preferences. There is no requirement, however, that the formal aspects of the personal communication networks be similar for members of a collective actor. In fact, we expect that collective actors typically will include persons who act in various roles, such as organizer, critic, pundit, and so forth (see Nuttall et al., 1968). All of these formally defined roles, however, will be related in that the persons enacting them are in pursuit of a shared objective.

Having defined the elementary units for the study of opposition, we are now in a position to move to the question of how to use them to characterize differing oppositional structures. We consider this issue in the next section.

Characterizing Oppositional Structures

Over the past five years Laumann and his colleagues have been developing a framework for the structural analysis of social systems (cf. Laumann, 1973; Laumann and Pappi, 1976; Laumann et al., 1977). In applying this framework, we must first identify individual *actors* and map them into the *social positions* that constitute the social system under analysis (cf. Parsons, 1951). Next, we may define and analyze a *social structure* as a persisting pattern of relationships among these social positions.

For the case at hand, collective actors organized around various issues resolved over time constitute the set of social positions of concern to us in the analysis of the conflict structure of an elite decision-making system. To proceed to analyze this oppositional structure, we must specify the domain or population of issues to which the structure pertains, and the nature of the relationships between collective actors.

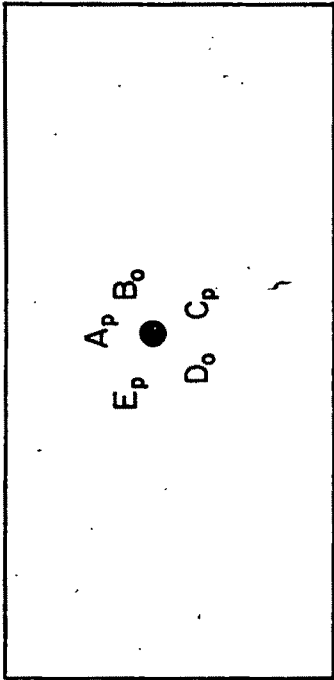
An intuitive way of thinking about re-

lationships between collective actors is to see them as functions of the pairwise similarities and dissimilarities of their constituent memberships. There is, by definition, maximal dissimilarity between the memberships of collective actors identified for a particular issue episode. Since, however, collective actors are to be defined for each distinct issue, the degree to which collective actors will overlap from issue to issue is empirically problematic.

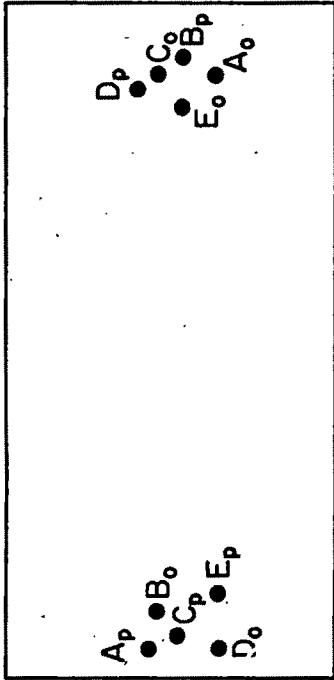
Examining overlapping memberships of subgroups of a leadership system is not, of course, an entirely novel endeavor. One frequent indicator of the degree of centralization of an elite is the extent of overlap between the participants in different controversies (Freeman, 1968; Clark, 1968b:580; Grimes et al., 1976:712). We previously have remarked (Laumann et al., 1977:596), however, that measuring overlap of participation without reference to preferred outcome may result in an incomplete or misleading structural description. For instance, a community in which the same persons play an active role in all issue episodes may be one in which a broad consensus prevails on all issue alternatives, or one in which two factions persistently disagree, or one involving shifting coalitions as different issues arise. The approach we propose here is not especially sensitive to participation per se, but it does permit us to discriminate among these different oppositional arrangements because of our definition of collective actors in terms of outcome preferences of their members.

Figure 1 portrays four theoretically possible configurations of collective actors. We have selected them because they can be linked to models commonly discussed in the literature on community power structures. In each of the four diagrams, the location of a collective actor is indicated by a point. The point is labelled by a capital letter with a subscripted *o* or *p*. The capital letter indicates the issue with which the collective actor is concerned, and the subscript tells whether the collective actor is an opponent (*o*) or a proponent (*p*) of the proposed change constituting an issue.

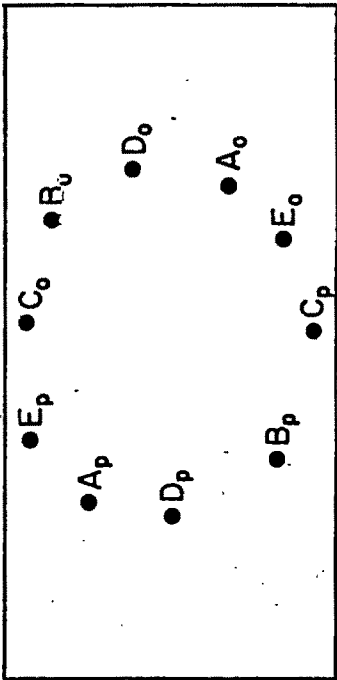
I. Centrally administered model,
no oppositional collective actors



II. Unidimensional oppositional model,
recurrently opposed collective actors



III. Multidimensional cleavage model,
coordinating center absent



IV. Polycentric bargaining model, with
widely scattered opposed collective actors

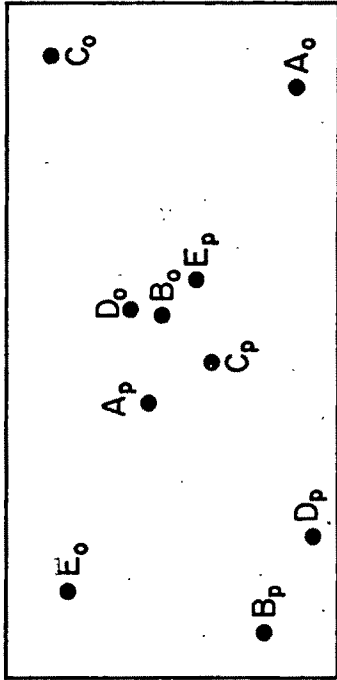


Figure 1. Four Theoretically Possible Models of the Oppositional Structure of Elite Decision-Making Systems

Model I presents the centrally administered version of an elite decision-making system. Here, the memberships of all collective actors are coincident with one another. There exist no collective actors opposing their dominion over the community. This would be a degenerate case in terms of the operational procedures for modelling the structure to be introduced below, but it would be easily recognized by the complete absence of any "losing" collective actors.

This centrally administered model corresponds to images of structure described as "pyramidal" or "elitist" in the literature. The classic case is, of course, Hunter's (1953) characterization of the power structure in Regional City. Note that it is not the case that all members of this elite were actively involved in the resolution of each issue considered; much overt "activity" involved efforts at implementation by second-level governmental leaders. There was, however, no effective opposition to the "crowd" dictating policy on any particular matter, nor any appreciable dissensus within the leadership as to preferred outcome. Other conceptions corresponding to our notion of a centrally administered model are Rossi's (1960) pyramidal structure and Gilbert's (1968) less pluralistic, elitist power structure.

In model II we have portrayed the polarized community leadership system. Such a system is discussed in Coleman's (1957) article on community conflict, and also is related to our earlier (Laumann et al., 1977:607) depiction of an "oppositional model" for the organization of communication contacts within an elite, and to Gilbert's (1968) notion of permanent factions within a less pluralistic power structure. Here we observe a single dimension of opposition, with clusters of collective actors arrayed at opposing poles of a continuum. The clusters contain collective actors which substantially or completely overlap in their constituent members. This is the situation in which we would expect collective actors to resemble sociometric cliques most closely, because of the consistent separation of leaders into shared oppositional positions,

which may be expected to generate solidarity among them.

Clearly, there must be substantial issue consistency within an elite if the polarized configuration is to emerge in a community. This is likely to be present only in communities in which there is only a single axis of social or economic differentiation (Laumann et al., 1977:624). Furthermore, a condition of stability for this model is that neither faction be continually unsuccessful. With a sharply skewed distribution of success, we would expect a loss of motivation by members of the unsuccessful group, and an eventual transformation of the polarized model into the centrally administered model.

Our third model, the multidimensional cleavage model, might occur in a more highly differentiated community. Model III is distinguished from our other models by two features. First, there are multiple bases for the generation of opposed interests. These serve to define stable oppositional groups within the different issue arenas. The second characteristic of a structure corresponding to model III is an absence of centrally located factions sharing members with a variety of more peripheral collective actors. That is, there is no oppositional unit consisting of actors recruited from diverse areas of community concern, that might be expected to serve as a coordinating center. The collective actors in such a structure would tend to be relatively homogenous in their composition and would be likely to pursue narrowly defined special interests.

In order for model III to be present, there must be *orderly* changes in the composition of collective actors as one moves around the ring in the figure. The members of any collective actor must be divided into subsets that overlap with the memberships of the adjacent collective actors in one direction or the other. A plausible empirical situation which might generate such an arrangement is one in which interests in an area such as health policy shade over into those in "adjacent" areas having to do with people-oriented services like welfare or education, but are unrelated to areas such as land development or transportation. This sort of model

would involve multiple, functionally specialized elites of the type postulated by Keller (1963). Model III is also descriptive of Rossi's (1960) "polyolith" model.

The final model to be discussed is that of the polycentric bargaining structure. This oppositional pattern also arises when there are multiple bases for interest formation. In contrast to model III, however, these bases tend to be unstable and ill-defined. This means that it is likely that at least one of the collective actors for each issue will be composed of quite diverse actors. Such heterogeneous groupings will tend to overlap substantially across issues, and will hence constitute a coordinating central position in the oppositional structure. More homogeneous collective actors representing particularistically defined interests will be arrayed around this core. The peripheral groups tend to resemble coalitions in that their members are activated only on the issue that is their special concern.

This model of multidimensional opposition including a coordinating center resembles images of power structure described as pluralistic, though they refer to a different model of pluralism than that in model III. The studies by Dahl (1961) and Banfield (1961) document situations in which a small number of individual actors participate in a broad range of issues, while coalitions arise around special interests. Model IV might also pertain to Rossi's (1960) notion of caucus rule, or to pluralistic situations described as "fluid alliances" (Gilbert, 1968) or "shifting coalitions."

Operationally Defining Collective Actors

Two decisions are necessary if the collective actor concept is to be used in empirical analyses of elite oppositional structures. One of these involves the selection of the set of issues to which the structure is to apply, and the operational definition of the preferences of individual actors must be mutually oriented to one concerns the definition of an "effective communication network" within the set of individual actors who share a preference.

Both of these elements of the operational definition of a collective actor allow considerable flexibility. We favor the choice of specific, concrete issues for the definition of collective actors, because they narrowly specify a commonality of interest for elite members. Others may prefer a broader definition of issues. There are, of course, several approaches to the measurement of preferences on these issues, however defined (see Clark, 1974; Laumann and Pappi, 1976: 170).

Clearly, there is also some latitude in the operational definition of an effective communication network. Two conditions are nonetheless indispensable here. First, actors must be mutually oriented to one another in a communication network if it is to be regarded as effective. In our analysis, we meet the mutual orientation criterion by specifying that members of a collective actor must be in a single strong component of a digraph,⁵ but others may wish to adopt a more limited definition of an effective linkage between actors, such as that suggested by Alba (1973). Secondly, we would require that the linkages in the network be established *before* the resolution of an issue around which a collective actor is formed, if they are to be used for the organization of collective action.

In the empirical examination of the oppositional structures in two community elites reported below, we use an operational definition of a collective actor as a set of at least three individuals in an elite who (1) share a self-reported preference on a specific issue and (2) constitute a strong component in a digraph formed by taking the union of three intraelite in-

⁵ The mathematical theory of digraphs (cf. Harary et al., 1965:v) is concerned with postulates and theorems relating to "abstract configurations called digraphs, which consist of 'points' and 'directed lines.'" The condensation of a digraph D occurs when one can partition the points in it into disjoint subsets S_1, S_2, \dots, S_k such that a new digraph may be drawn in which there is a line from S_i to S_j if and only if in D there is at least one line from a point in S_i to a point in S_j . The sets of points S_1, S_2, \dots, S_k are the *strong components* of the digraph. Within each strong component, or maximal strong subgraph, a directed path of some length exists connecting each pair of points included in the set.

teraction networks. These networks include an individual's three most frequent contacts with other elite members for (a) business or professional relations, (b) informal social relations, and (c) the discussion of community affairs (cf. Laumann and Pappi, 1976; Laumann et al., 1977).⁶ The requirement of a minimum of three members is adopted as a convenience, to keep the number of collective actors to be analyzed manageable.

An Empirical Examination of Collective Actors in Two Communities

To illustrate the application of the collective actor concept and our methods for the study of oppositional structures, we have analyzed data on elites in two communities we have recently studied, Altneustadt, West Germany, and Towertown, U.S. Both are small cities that serve as distribution centers for surrounding agricultural areas; neither is dominated by a nearby urban center. Each is the site of a large institution—a natural science research center in Altneustadt and a large state university in Towertown. The dominant lifestyle of both communities may be described as middle class (for additional details on the two communities, see Laumann and Pappi [1976]; Laumann et al. [1977]).

In each community, a local elite was identified by the positional-reputational method described by Laumann and Pappi (1973; 1976: 95–100, 270–3). We also selected five local issues for intensive study. Our criteria for issue selection were (1) that each issue studied have a major impact on community affairs in the eyes of our informants, and (2) that there be some diversity in content of issues within the set chosen for each community (see Laumann et al., 1977: 600–2).

In Altneustadt, the issues identified according to the above considerations were (a) relocation of a large industrial firm to the community; (b) construction of a new city hall; (c) incorporation of outlying

communities into an expanded city administrative unit; (d) establishment of a secular primary school as opposed to the existing confessional school; and (e) permission to hold a rock concert in public park lands in the community. In Towertown, the issues studied were (a) construction of a new private health-services center to replace a local public hospital; (b) choice of the appropriate jurisdiction, the city or the county, to administer a proposed new local airport; (c) imposition of a curfew after student disturbances at the university during the Vietnam conflict; (d) choice of location for a new post office, either in an urban renewal area or close to the major downtown banks and businesses; and (e) closing of an experimental school by the Board of Education in favor of reinstitution of a neighborhood-school plan.

The remaining information necessary to identify empirically collective actors is a description of the communication network involving elite members. This was obtained by combining the answers to three questions concerning different types of contact, as noted above (for text of questions, see Laumann and Pappi, 1973: 217n).

Using this information, we identified collective actors in both communities. First, each network was partitioned into groups of individual actors sharing an outcome preference. We then located the strong components in the graphs resulting from the partitioning. This procedure located nine collective actors in Altneustadt and ten in Towertown. We have presented some illustrative data on the network features and compositional characteristics of these oppositional groups in Tables 1 and 2.

The first table presents selected network characteristics of the collective actors identified. Inspection of the table shows that collective actors vary widely on characteristics that have been theoretically and empirically linked to variations in the ways subnetworks function in larger systems by other studies (cf. Mitchell, 1969; Leinhardt, 1977). It would not surprise us to find, for example, that the size of a collective actor might have a strong impact on its likelihood of success. While

⁶ Strictly speaking, our measurement procedures do not allow us to establish with certainty that the linkages between elite members were formed prior to all issue episodes considered, as our operational definition of a collective actor would ideally require.

Table 1. Network Characteristics of the Collective Actors

A. Altneustadt					
Issue	Collective Actor ^a	Size	Density ^b	Maximum Path Distance ^c	Average Path Distance ^d
Industrial Resettlement City Hall	A _p (X)	37	21	6	2.7
	B _p (X)	26	22	7	3.0
	B _{o1}	3	100	1	1.0
	B _{o2}	3	67	2	1.3
Incorporation School	C _p (X)	30	20	7	3.3
	D _p (X)	32	20	8	3.2
Pop Festival	E _p	13	33	5	2.4
	E _{o1} (X)	8	6	6	2.6
	E _{o2} (X)	3	100	1	1.0
B. Towertown					
Issue	Collective Actor ^a	Size	Density ^b	Maximum Path Distance ^c	Average Path Distance ^d
Hospital	A _p (X)	45	18	7	3.2
	A _o	3	67	2	1.3
Airport	B _p (X)	5	67	3	1.8
	B _o	46	19	7	2.8
Curfew	C _p (X)	24	20	5	2.6
	C _o	6	80	3	1.7
Post Office	D _p (X)	14	24	8	3.0
	D _o	18	39	5	2.2
School	E _p	11	75	7	3.9
	E _o (X)	18	11	8	4.2

^a Notation in this column is used to refer to the collective actors in the figures below. An "X" in parentheses indicates that the collective actor was successful.

^b Density is defined as the percentage of possible linkages between members of a collective actor that are actually present.

^c Largest path distance connecting members of a collective actor in a digraph (cf. Harary et al., 1965: ch 5).

^d Mean path distance connecting members of a collective actor.

this "obvious" inference is sustained for Altneustadt ($r_s = .56$), it is not for Towertown, where there is only a slight positive correlation between size and being a winning collective actor ($r_s = .21$).⁷

Three other characteristics of a collective actor, its density of connectedness, its maximum path distance or "diameter," and its average path distance between members, can be quite plausibly linked to its relative organizational facility in mobilizing constituents in support of a particular policy initiative. Unfortunately, respondents were limited to three choices in each of the three relational networks used in the analysis, and this imposes some artifactual constraints on the values of these variables due to the varying sizes

of collective actors. When the number of choices per actor is restricted, it is necessarily the case that larger collective actors tend to have lower densities, and higher maximum and average path distances. The relationships of these network properties to success are thus largely artifactual, owing to size. Despite this, however, we would suggest that the fact that a large network is only loosely and non-redundantly interconnected should place some limitations on its ability to form an effective coalition. Smaller, dense collective actors, in which all constituent members can easily have access to one another, would appear to have some competitive advantage in coordinating their behavior vis-à-vis larger opponents (cf. Lipset et al., 1956; Olson, 1965). Such advantages may be outweighed in the long run, though, by the greater range and quantity of resources that larger collective actors can mobilize.

Table 2 directs attention to variations in

⁷ Because each correlation reported here refers to a very small number of units, we have reported Spearman rank correlations which are less sensitive to outliers. The corresponding Pearson correlations, however, yield identical substantive implications.

Table 2. Compositional Characteristics of the Collective Actors

A. Altneustadt									
Collective Actor ^a	Occupational Composition ^b	Political Identification ^c	Influence ^d	Resource: Authority ^e	Resource: Mobilizer ^f	Issue Activity ^g	General Activity ^h	Egalitarian Ideology ⁱ	Ideology: Family ^j
A _p (X)	24%	60%	21.4	27%	11%	n.a.	1.43	0.07	0.04
B _p (X)	35%	77%	23.2	23%	15%	42%	1.35	-0.04	0.23
B _{o1}	0%	33%	25.2	0%	0%	33%	1.00	0.80	-1.11
B _{o2}	67%	33%	10.3	67%	0%	33%	1.33	-1.30	-0.56
C _p (X)	27%	63%	23.8	20%	10%	27%	1.47	0.12	0.16
D _p (X)	31%	63%	23.5	22%	13%	66%	1.28	-0.04	0.00
E _p	8%	31%	18.1	31%	15%	n.a.	1.62	0.64	-0.42
E _{o1} (X)	13%	63%	27.8	0%	13%	n.a.	1.25	-0.02	-0.04
E _{o2} (X)	67%	100%	18.8	33%	0%	n.a.	1.00	-0.46	0.21
Entire Elite	33%	57%	20.3	16%	8%	46%	1.37	0.00	0.00
B. Towertown									
A _p (X)	49%	51%	33.3	31%	33%	69%	1.78	-0.12	-0.41
A _o	67%	100%	10.0	33%	100%	33%	2.00	-0.36	0.13
B _p (X)	80%	60%	35.2	20%	20%	80%	1.40	-0.78	0.94
B _o	46%	48%	31.7	37%	37%	46%	1.93	-0.04	-0.22
C _p (X)	54%	67%	26.6	33%	38%	21%	2.29	-0.54	0.04
C _o	17%	17%	34.4	33%	67%	0%	1.17	0.79	-0.94
D _p (X)	64%	50%	31.9	43%	29%	67%	1.86	-0.02	-0.04
D _o	56%	72%	20.3	34%	67%	21%	2.50	-0.25	0.00
E _p	18%	46%	30.1	27%	55%	55%	2.00	0.35	-0.26
E _o (X)	67%	56%	31.6	34%	34%	39%	2.06	-0.56	-0.31
Entire Elite	40%	48%	39.8	29%	26%	33%	1.64	0.00	0.00

^a Notation in this column is used to refer to the collective actors in the figures below. An "X" in parentheses indicates that the collective actor was successful.

^b Percentage of members of a collective actor who are primarily active in the business or economic sector. Refer to Table 1 for case bases for percentages.

^c Percentage of members of a collective actor who identify with the dominant political party in the community (in Altneustadt, the Christian Democratic Union; in Towertown, the Republican party).

^d Mean influence rank of members, as determined by the procedure outlined in Laumann and Pappi (1976: 98-100).

^e Percentages of members of a collective actor who are attributed the influence resource of official decision-making authority (see Laumann and Pappi, 1976: chap. 11).

^f Percentage of members of a collective actor who are attributed the influence resource of reputation as a public mobilizer.

^g Percentage of members of a collective actor who were active in the resolution of the issue around which the collective actor is formed. This information is not available (n.a.) for the two hypothetical issues in Altneustadt.

^h Mean number of issues on which members of this collective actor were activated, out of the three issues decided in Altneustadt or the five issues decided in Towertown.

ⁱ Mean standardized score on social egalitarianism scale (see Laumann and Pappi, 1976: 74-9, 120, 278-9). Items included modified for Towertown.

^j Mean standardized score on family traditionalism scale (see Laumann and Pappi, 1976: 74-9, 120, 278-9). Items included modified for Towertown.

membership of collective actors. With such information, it is possible to examine the internal homogeneity/heterogeneity of collective actors (cf. Laumann, 1973: 83-110). We would expect that the more socially and attitudinally homogenous the members of a collective actor, the more likely the formation of direct communication links among them, and the more cohesive and integrated the collective actor. Heterogeneously composed net-

works, on the other hand, might be more loosely interconnected. Coordination of effort in such networks is expected to be weaker and less effective than it would be in more homogeneously composed networks.

Inspection of Table 2 reveals patterned differences across collective actors with respect to several compositional characteristics. These observed differences among collective actors will be helpful in

the next section in interpreting their interrelationships based on overlapping memberships. Here, we would like to draw brief attention to certain systematic covariations among collective actors on these compositional attributes. To identify covariations of possible theoretical interest, we calculated the matrix of rank correlations for Table 2, separately for each community.

Rather than reporting all of these correlations in detail, we shall summarize those that appear to be of special interest in that they suggest salient characteristics of successful conflict groups.⁸ Recall, first, the results on size reported above. Next, we find that in both communities a moderate positive association between the proportion of a collective actor's membership which is active on the issue in question and its success ($r_s = .30$ in Altneustadt; $r_s = .51$ in Towertown). In Towertown we find that winning collective actors are somewhat more likely to include members drawn from the business or economic sector ($r_s = .49$); in Altneustadt, a similarly signed relationship is not as strong ($r_s = .32$). The collective actors in Altneustadt are better distinguished by the proportions of their membership drawn from the dominant political party—successful collective actors being much more likely to include such persons ($r_s = .84$). There is no association at all between these attributes in Towertown, confirming our general observations that formal political structures are of relatively little consequence in this American setting.

Turning next to the question of the influence resources possessed by winning collective actors, we first take note of the fact that a high proportion of members holding public authority is not strongly associated with success in either Towertown or Altneustadt. In fact, we find that the weak relationships which do appear are both negatively signed. In

Altneustadt, there is a low positive association ($r_s = .23$) between the proportion of members with reputations as public mobilizers and a collective actor's success; in Towertown, however, this is sharply reversed ($r_s = -.80$). These results suggest that influence processes in these communities take place largely in informal settings, where the influence resources treated as salient and legitimate by many authors are of relatively little consequence.

Finally, we shall briefly address the question of the extent to which the conflict groups in these communities are differentiated by ideological commitment. We find that, in Altneustadt, the successful collective actors are much more likely to espouse traditional values concerning family structure and practices ($r_s = .82$). This relationship is much weaker ($r_s = .09$) in Towertown. In the latter community, however, the winning collective actors include members who tend to reject socially egalitarian attitudes ($r_s = -.45$), an association that is somewhat weaker ($r_s = -.28$) in the German community. In general, however, the evidence suggests that the construction of collective actors depends much more on sharing an ideological orientation in Altneustadt than it does in Towertown. Thus, we have provided further support for an observation made elsewhere (Laumann et al., 1977) that the elite system in Towertown tends to be much more pragmatic and oriented to bargaining and negotiation by comparison with the more ideologically rooted conflict structure of Altneustadt's elite (cf. Laumann and Pappi, 1976: chap. 4, 6). We shall present further evidence for such a generalization in our examination of the oppositional structures of the two communities.

The Oppositional Structures of the Two Communities

In this section, we examine the overlapping memberships of collective actors in each community, in order to characterize its oppositional structure. To do this, we first constructed a binary matrix M , in which the element m_{ij} indicates the membership status of elite member i in

⁸ Two issues in Altneustadt, the industrial resettlement issue and the pop festival issue, were hypothetical. For these, the "successful" option was determined from the majority opinion of the elite as to which side, the proponents or the opponents, would be victorious (see Laumann and Pappi, 1976: 167-8n, 285-6).

collective actor j . We then formed the matrix product

$$S = M'M;$$

where s_{ij} gives the number of members shared by collective actors i and j and M' is the transpose of M (see Breiger, 1974).

It is useful to embed these patterns of overlapping memberships in a geometric space, so that we can examine them in relation to the four models of oppositional structure presented above. In doing this, we transformed the overlapping memberships, to assure that the geometric configurations would not be merely a reflection of the differential sizes of collective actors. Therefore, for each pair of collective actors, we cross tabulated dichotomous variables giving membership in each, and calculated the log-linear interaction parameter for that cross-tabulation. This defines the following proximity measure:

$$v_{ij} = \frac{1}{4} \log s_{ij} - \frac{1}{4} \log s_{i\bar{j}} \\ - \frac{1}{4} \log s_{\bar{i}j} + \frac{1}{4} \log s_{\bar{i}\bar{j}},$$

where v_{ij} is the proximity of collective actor i to collective actor j , s_{ij} is the number of members shared by collective actors i and j , $s_{i\bar{j}}$ is the number of persons who are members of collective actor i but not collective actor j , $s_{\bar{i}j}$ is the number of persons who are members of collective actor j but not collective actor i , and $s_{\bar{i}\bar{j}}$ is the number of persons who are members of neither collective actor. Note that different collective actors on the same issue are necessarily defined as having the lowest possible proximities to one another, since membership in collective actors is mutually exclusive within issues.⁹

The two matrices of proximities were then submitted to smallest space

analysis—I (SSA-1; Lingoes, 1973). Two-dimensional configurations of collective actors resulting from these analyses are presented in Figures 2 and 3 for Altneustadt and Towertown, respectively.

The first thing to note about the oppositional structure for Altneustadt is that three collective actors, A_p , C_p , and D_p , are unopposed. Secondly, observe that the opposition on the other two issues, the city hall and the pop festival, is fragmented into two collective actors. For these reasons we suggest that the oppositional structure in Altneustadt is a mixture of our theoretical models I and II. The two-dimensional configuration is necessary to accommodate the fragmentation.¹⁰

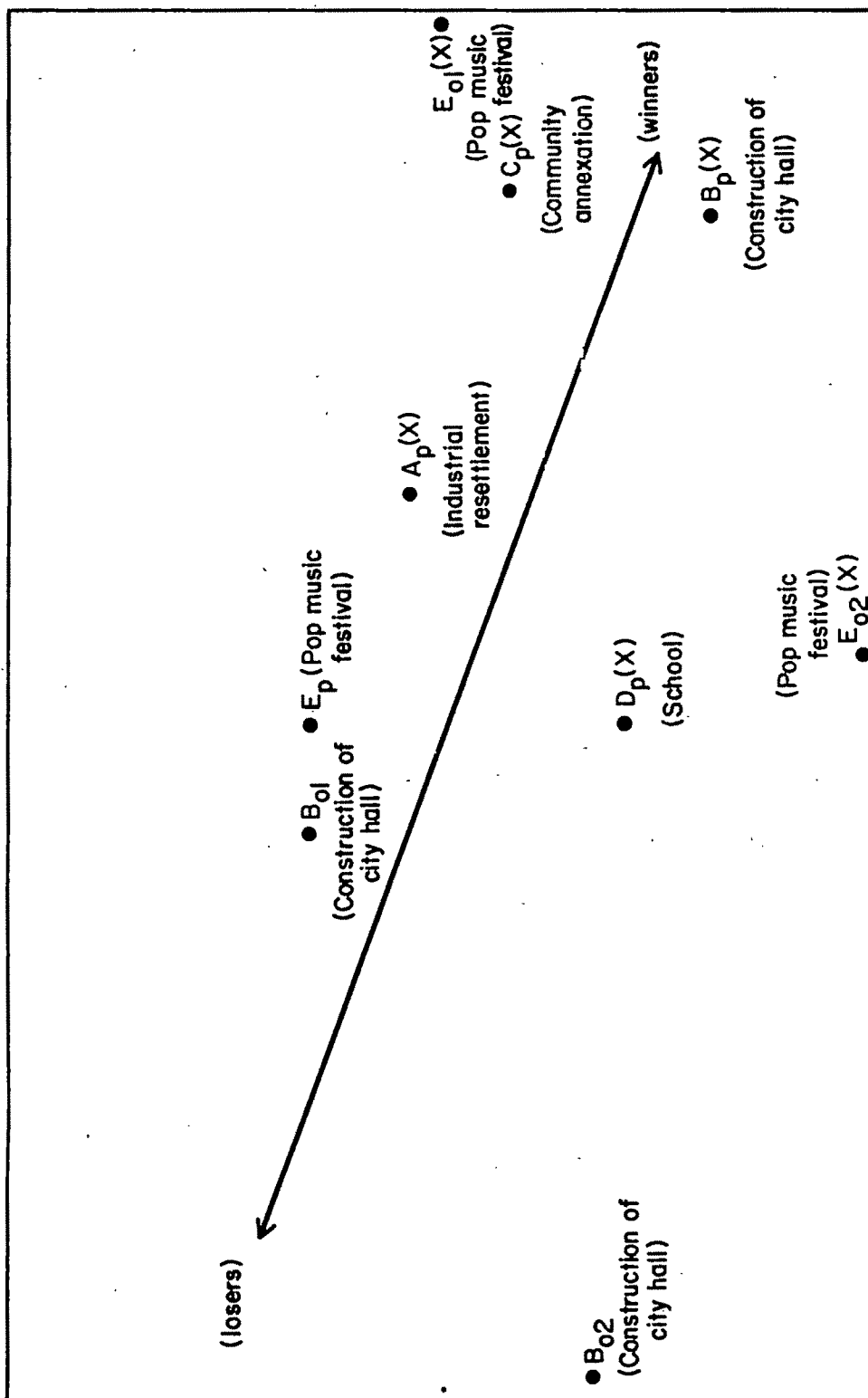
In Figure 2, the successful collective actors are arrayed to the right of the space, while unsuccessful collective actors are located toward its upper left corner. The axis sketched in the diagram follows the recurrent ideological split between the socially and economically liberal Social Democratic party (S.P.D.) group and the more conservative Christian Democratic Union (C.D.U.) supporters.

The second dimension of the space simply distinguishes between the two pairs of collective actors that share preferences on an issue but have no linkages to one another. This fragmentation is easily explained, given the social composition of these collective actors. The first pair of collective actors, B_{o1} and B_{o2} , share opposition to the construction of a new city hall. B_{o1} consists of S.P.D. supporters and fellow travellers recruited from the natural science research center who hold highly egalitarian views (see Table 2), while B_{o2} is a set of economically conservative C.D.U. businessmen with economic interests in the county rather than the city of Altneustadt, who objected to the building of an expensive city hall by their usual allies, the city-dominated C.D.U. personnel (B_p).

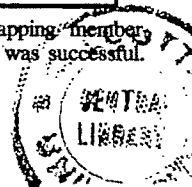
The two collective actors opposed to the pop festival, E_{o1} and E_{o2} , are both con-

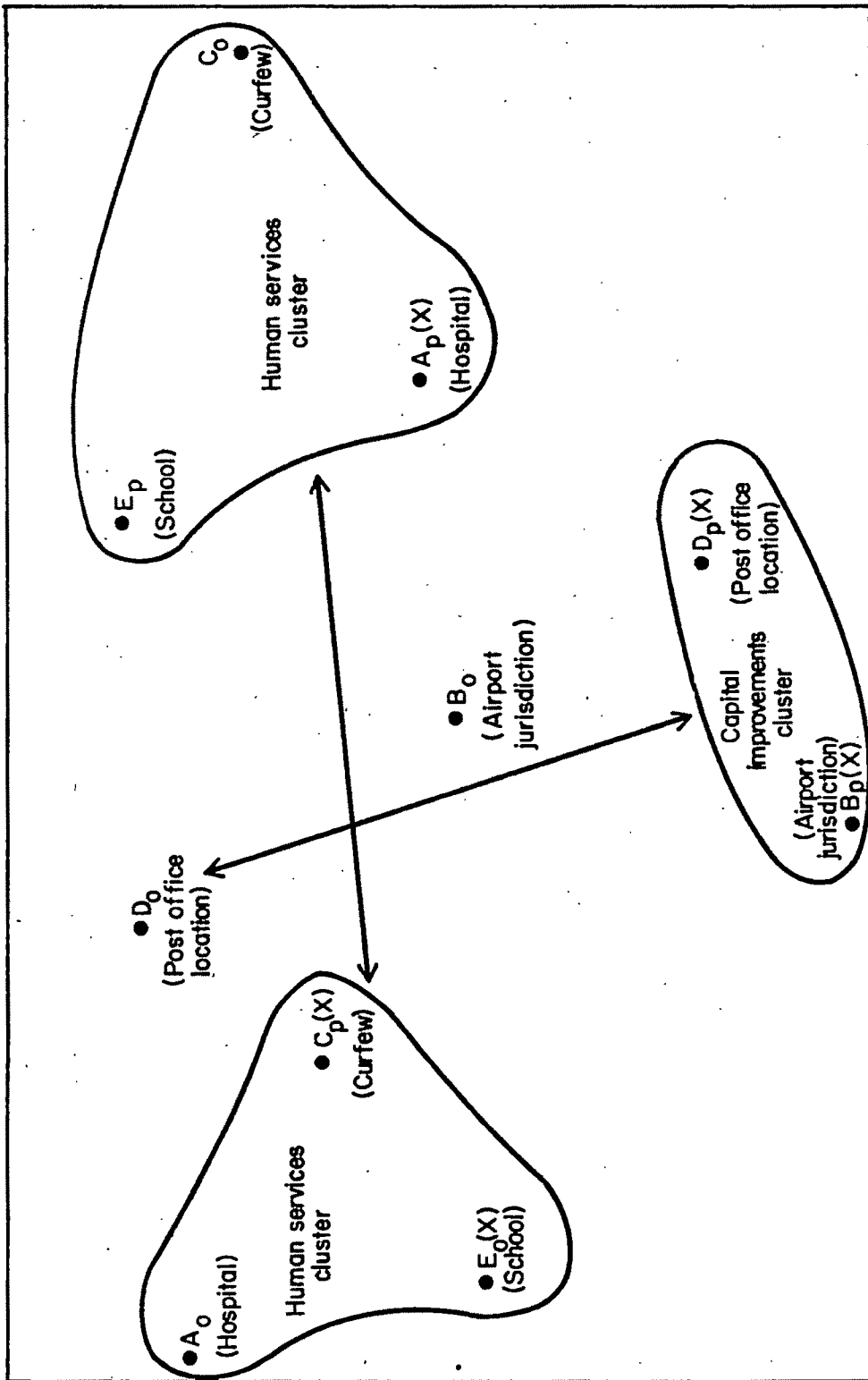
⁹ A small quantity (0.1) was added to each of the frequencies in the formula for v_{ij} to avoid taking logarithms of zero. This artificially creates differences in estimated proximities corresponding to zero overlaps in membership. Since the proximities corresponding to zero overlaps should indicate maximal distances between collective actors, and should be equivalent to one another, we equated the v_{ij} -scores corresponding to zero overlaps. This insures that they will be appropriately treated as ties by the multidimensional scaling algorithm used in our analysis.

¹⁰ The one-dimensional smallest space solution for Altneustadt had an unacceptably high coefficient of alienation of 0.24.



* Smallest-space analysis-1 (SSA-1; Lingoes, 1973) of proximities estimated from overlapping memberships. Coefficient of Alienation = 0.09. An (X) in parentheses indicates that a collective actor was successful.
Figure 2. Oppositional Structure in Altneustadt.*





* Smallest-space analysis-1 (SSA-1; Lingoes, 1973) of proximities estimated from overlapping memberships. Coefficient of Alienation = 0.14. An (X) in parentheses indicates that a collective actor was successful. Figure 3. Oppositional Structure in Towertown.*

servative in orientation. They are recruited, however, from quite disparate institutional sectors—the county-oriented industrial, agricultural, and land development sector, and the city-based commercial interests—and thus lacked opportunities to form communication channels. Note, however, that despite their fragmentation, it was the prevailing opinion in the elite that these groups would be successful in preventing the pop festival from occurring.¹¹

Note that two of the three unopposed collective actors, A_p , C_p , and D_p , are relatively central in Figure 2. This occurs because all are large and heterogeneous in composition. This insures that they have substantial overlap with all other collective actors in the system. D_p , however, is drawn toward the S.P.D. groups E_p and B_{oi} because the S.P.D. group initiated the proposal for a secular rather than a religiously based public middle school. At its onset the school controversy was quite bitter and divisive; it eventually attracted widespread support within the elite, though, drawing D_p toward the center of the oppositional structure in Altnestadt (see Laumann and Pappi [1976: 101–31; 163–72] for a more detailed treatment of these controversies and their partisans).

Examination of Figure 3 depicting the oppositional structure of Towertown's elite suggests that it is a good approximation to our theoretical model III, the multidimensional cleavage model with no coordinating center. First, note that the collective actors are arranged roughly in a circle. Observe also that successful collective actors are scattered fairly uniformly around the rim and are interspersed with losing collective actors. The rim formation further suggests that there is relatively little systematic overlap among winning collective actors. If such overlap had occurred, this would have drawn the successful collective actors toward the center of the space and cast the unsuccessful ones toward the periphery—thus forming the arrangement postulated in the polycentric bargaining structure of model IV. Finally, note the two nearly orthogonal dimensions, the

first contrasting collective actors concerned with the provision of human services, education, and health, and the regulation of conduct,¹² and the second ordering opposing collective actors concerned with major capital expenditures having implications for agricultural, industrial and residential land development.

The construction of a new regional (rather than city) hospital under private auspices raised questions both with regard to the commitment of substantial capital resources from the private and public sectors and with regard to the nature and character of the health services to be provided, especially the question of mental health facilities. Since this issue had both narrowly economic and broader social implications, it is interesting to note the intermediate location of A_p in Figure 3, between collective actors concerned with "purer" economic issues of airport jurisdiction and the location of a post office, and those concerned with the value-rooted issues of the curfew and the school.¹³

The only centrally located collective actor in Figures 3, B_o , was a loser, despite its size and heterogeneous composition. It included nearly the entire set of influentials in the city—thus its central location—who opposed the airport because of its costs to the city. This group, however, was unsuccessful because the authority to make the final binding decision was lodged in the county board of commissioners. The proximity of the winning C_p and the losing D_o arose from their overlapping membership of downtown businessmen who, on the one hand, op-

¹² The curfew issue is concerned with the regulation of conduct. In this issue, a curfew was imposed by the mayor in the aftermath of disturbances and destruction of property in the central business district by students protesting the bombing of Cambodia during the Vietnam War.

¹³ Members of E_p were primarily persons from the university community and their liberal allies. They opposed the closing of a progressively oriented school in the city system, that originally had been run by the university's School of Education as a laboratory and training facility. This school had been scheduled by the local Board of Education to be replaced by a conventional neighborhood school program.

¹¹ See fn. 8.

posed the location of the new post office in an urban renewal area inconvenient to the central business district and who also supported the mayor's imposition of a curfew after the "trashing" of the downtown business area.

Recall that there is little evidence to support the notion that the collective actors in Towertown are systematically differentiated with respect to basic social value orientations. This, in addition to the results shown in Figure 3, contributes to our characterization of Towertown's oppositional structure as a set of systematically shifting collective actors with no central coordinating core.

The images of oppositional structure that we have discussed here are in accord with the subjective perceptions of the influence structure reported by the elite members themselves. In Altneustadt, over 75% of the elite agrees that the oppositional structure is one in which there is persistent conflict between stable factions. By contrast, in Towertown perceptions are much less clear: a plurality of more than 45% of the elite members there describes the community structure as one of shifting coalitions, while over 40% characterizes it as a stable factional structure. This lack of clarity in Towertown is understandable, given the more complex structure of collective actors depicted in Figure 3.

Summary and Conclusion

We have proposed a new concept, that of a collective actor, that is to serve as the analytic unit in the study of oppositional structures in collective decision-making systems. After distinguishing this concept from others currently in use, we developed a set of spatial models describing the alternative forms of oppositional structure that have received attention in the literature. We then attempted to demonstrate the utility of our approach in a comparative analysis of two quite different community elite systems. Needless to say, much remains to be done in refining and elaborating the concept and the research strategies associated with it.

We will conclude by mentioning some implications of our work here for network

analyses of elite systems. We have not criticized the use of existing clustering techniques for the analysis of network data. What we have suggested is that in the study and depiction of conflict structures using such techniques, it is necessary to take explicit account of interests or preferences in addition to data on linkages between elite members. While preferences well may be associated with similarities in structural position within networks (Burt, 1978), the association is frequently weak enough to make it hazardous to characterize oppositional structures on the basis of network data alone. Equally importantly, one must not emphasize preferences to the exclusion of linkages; to do so is to ignore important questions concerning the social organization of conflict groups.

None of the above should be taken to imply that analyses of role structure (Burt, 1977; Breiger and Pattison, 1978) based on network data alone are not useful contributions. When investigators are specifically concerned with oppositional roles and structures, however, we think the approach offered here will prove preferable.

REFERENCES

- Aiken, Michael
1970 "The distribution of community power: structural and social consequences." Pp. 487-525 in Michael Aiken and Paul E. Mott (eds.), *The Structure of Community Power*. New York: Random House.
- Alba, Richard D.
1973 "A graph-theoretic definition of a sociometric clique." *Journal of Mathematical Sociology* 3:113-26.
- Alba, Richard D. and Charles Kadushin
1976 "The intersection of social circles: a new measure of social proximity in networks." *Sociological Methods and Research* 5: 77-102.
- Alba, Richard D. and Gwen Moore
1978 "Elite social circles." *Sociological Methods and Research* 7:167-88.
- Aldrich, Howard
1979 *Organizations and Environments*. Englewood Cliffs: Prentice-Hall.
- Asch, S. E.
1951 "Effects of group pressure upon the modification and distortion of judgments." Pp. 174-90 in H. Guetzkow (ed.), *Groups, Leadership and Men*. Pittsburgh: Carnegie Press.
- Banfield, Edward C.
1961 *Political Influence*. New York: Free Press.

- Barton, Allen H., Bogan Denitch, and Charles Kadushin
1973 *Opinion-Making Elites in Yugoslavia*. New York: Praeger.
- Boissevain, Jeremy
1974 *Friends of Friends: Networks, Manipulation and Coalitions*. Oxford: Blackwell.
- Breiger, Ronald L.
1974 "The duality of persons and groups." *Social Forces* 53:181-90.
1979 "Toward an operational theory of community elite structures." *Quality and Quantity* 13:21-57.
- Breiger, Ronald L. and Philippa E. Pattison
1978 "The joint role structure of two communities' elites." *Sociological Methods and Research* 7:213-26.
- Burt, Ronald S.
1977 "Positions in multiple network systems, part two: stratification and prestige among elite decision makers in the community of Alneustadt." *Social Forces* 55:551-75.
1978 "Cohesion versus structural equivalence as a basis for network subgroups." *Sociological Methods and Research* 7:189-212.
- Clark, Terry N.
1968a "The concept of power." Pp. 45-81 in Terry N. Clark (ed.), *Community Structure and Decision Making: Comparative Analyses*. San Francisco: Chandler.
1968b "Community structure, decision making, budget expenditures, and urban renewal in 51 American communities." *American Sociological Review* 33:576-93.
1974 "Can you cut a budget pie?" *Policy and Politics* 3:3-31.
- Coleman, James S.
1957 *Community Conflict*. Glencoe: Free Press.
1973 *The Mathematics of Collective Action*. Chicago: Aldine.
- Cook, Karen S.
1977 "Exchange and power in networks of inter-organizational relations." *Sociological Quarterly* 18:62-82.
- Dahl, Robert A.
1961 *Who Governs? Democracy and Power in an American City*. New Haven: Yale University Press.
- Domhoff, G. William
1970 *The Higher Circles: The Governing Class in America*. New York: Random House.
- Freeman, Linton C.
1968 *Patterns of Local Community Leadership*. Indianapolis: Bobbs-Merrill.
- Gamson, William A.
1968 "Coalition formation." Pp. 529-33 in David L. Sills (ed.), *International Encyclopedia of the Social Sciences*, Vol. 2. New York: Macmillan.
- Gilbert, Claire W.
1968 "Community power and decision making: a quantitative examination of previous research." Pp. 139-56 in Terry N. Clark (ed.), *Community Structure and Decision Making: Comparative Analyses*. San Francisco: Chandler.
- Grimes, Michael D., Charles M. Bonjean, J. Larry Lyon, and Robert L. Lineberry
1976 "Community structure and leadership arrangements: a multidimensional analysis." *American Sociological Review* 41:706-25.
- Harary, Frank Robert Z. Norman, and Dorwin Cartwright
1965 *Structural Models: An Introduction to the Theory of Directed Graphs*. New York: Wiley.
- Hunter, Floyd
1953 *Community Power Structure*. Chapel Hill: University of North Carolina Press.
- Kadushin, Charles
1968 "Power, influence and social circles: a new methodology for studying opinion makers." *American Sociological Review* 33:685-99.
1974 *The American Intellectual Elite*. Boston: Little, Brown.
1976 "Networks and circles in the production of culture." *American Behavioral Scientist* 19:769-84.
- Keller, Suzanne
1963 *Beyond the Ruling Class: Strategic Elites in Modern Society*. New York: Random House.
- Key, V. O., Jr.
1949 *Southern Politics in State and Nation*. New York: Knopf.
- Laumann, Edward O.
1973 *Bonds of Pluralism: The Form and Substance of Urban Social Networks*. New York: Wiley-Interscience.
- Laumann, Edward O., Peter V. Marsden and Joseph Galaskiewicz
1977 "Community-elite influence structures: extension of a network approach." *American Journal of Sociology* 83:594-631.
- Laumann, Edward O., and Franz U. Pappi
1973 "New directions in the study of community elites." *American Sociological Review* 38:212-30.
1976 *Networks of Collective Action*. New York: Academic Press.
- Leinhardt, Samuel (ed.)
1977 *Social Networks: A Developing Paradigm*. New York: Academic Press.
- Lingoes, James C.
1973 *The Guttman-Lingoes Nonmetric Program Series*. Ann Arbor: Mathesis Press.
- Lipset, Seymour M., Martin A. Trow, and James S. Coleman
1956 *Union Democracy*. New York: Free Press.
- Luce, R. D. and A. D. Perry
1949 "A method of matrix analysis of group structure." *Psychometrika* 14:95-116.
- Marsden, Peter V. and Edward O. Laumann
1977 "Collective action in a community elite: exchange, influence resources and issue resolution." Pp. 199-250 in Roland J. Liebert and Allen W. Imersheim (eds.), *Power, Paradigms, and Community Research*. London: ISA/Sage.
- Mayer, A. C.
1966 "The significance of quasi-groups in the study of complex societies." Pp. 97-122 in

- M. Banton (ed.), *The Social Anthropology of Complex Societies*. London: Tavistock.
- Mitchell, J. Clyde (ed.)
1969 *Social Networks in Urban Situations*. Manchester, U.K.: Manchester University Press.
- Moore, Gwen
1979 "The structure of a national elite network." *American Sociological Review* 44:673-92.
- Newcomb, Theodore M.
1961 *The Acquaintance Process*. New York: Holt, Rinehart and Winston.
- Nuttall, Ronald L., Erwin K. Scheuch, and Chad Gordon
1968 "On the structure of influence." Pp. 349-82 in Terry N. Clark (ed.), *Community Structure and Decision Making: Comparative Analyses*. San Francisco: Chandler.
- Olson, Mancur
1965 *The Logic of Collective Action*. Cambridge, Ma.: Harvard University Press.
- Parsons, Talcott
1951 *The Social System*. Glencoe: Free Press.
1969 *Politics and Social Structure*. New York: Free Press.
- Riker, William H.
1962 *The Theory of Political Coalitions*. New Haven: Yale University Press.
1968 "The study of coalitions." Pp. 524-29 in David L. Sills (ed.), *International Encyclopedia of the Social Sciences*, Vol. 2. New York: Macmillan.
- Rossi, Peter H.
1960 "Power and community structure." *Midwest Journal of Political Science* 4:390-401.
- Sherif, Muzafer
1936 *The Psychology of Social Norms*. New York: Harper and Row.
- Sonquist, John A. and Tom Koenig
1976 "Examining corporate interconnections through interlocking directorates." Pp. 53-83 in Tom R. Burns and Walter Buckley (eds.), *Power and Control: Social Structures and Their Transformation*. London: ISA/Sage.
- Stinchcombe, Arthur L.
1975 "Social structure and politics." Pp. 557-622 in Fred I. Greenstein and Nelson W. Polsby (eds.), *Handbook of Political Science*, Vol. 3: *Macropolitical Theory*. Menlo Park: Addison-Wesley.
- Walton, John
1966 "Substance and artifact: the current status of research on community power structure." *American Journal of Sociology* 71:430-8.
- White, Harrison C., Scott A. Boorman, and Ronald L. Breiger
1976 "Social structure from multiple networks, I: blockmodels of roles and positions." *American Journal of Sociology* 81:730-80.
- Whyte, William Foote
1943 *Street Corner Society*. Chicago: University of Chicago Press.

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Robin M. Williams, Jr., Department of Sociology, Cornell University, Ithaca, New York 14853.

SMALL GROUPS AND CULTURE CREATION: THE IDIOCULTURE OF LITTLE LEAGUE BASEBALL TEAMS*

GARY ALAN FINE

University of Minnesota

American Sociological Review 1979, Vol. 44 (October):733-745

Following interactionist theory, this study argues that cultural creation and usage can be examined by conceptualizing cultural forms as originating in a small-group context. Those cultural elements which characterize an interacting group are termed the *idioculture* of the group. This approach focuses on the content of small-group interaction, and suggests that the meanings of cultural items in a small group must be considered in order to comprehend their continued existence as communication. Five characteristics of cultural items affect which items will become part of a group culture. Cultural forms may be created and continue to be utilized in situations if they are *known* to members of the interacting group, *usable* in the course of group interaction, *functional* in supporting group goals and individual needs, *appropriate* in supporting the status hierarchy of the group, and *triggered* by events which occur in group interaction. These elements have impact only through the interpretations of group members of their situations. Support for this approach is drawn from a participant observation study of Little League baseball teams.

The concept of culture generally has not proven useful as a significant variable in sociology because of difficulties associated with specifying its content and the population serving as its referent. One speaks glibly of the culture of a particular group with the expectation that one's audience will have a common-sense understanding of what is meant. Because of the difficulties and ambiguities involved in the use of the term *culture* (Geertz, 1973:89), it virtually has been disregarded in recent sociological writing as a major theoretical variable.

The term refers to a central feature of human societies, and because of its sociological relevance, a reconceptualization of the culture concept is desirable. However, in order to avoid treating culture as an amorphous, indescribable mist which swirls around society members, it is

necessary to ground the term in interaction. Such specification can avoid the lack of common meaning often involved in studies of national cultures or subcultures. Blumer (1969) has argued that meaning derives from interaction, and culture, a set of shared understandings, is clearly implicated in Blumer's premise. While culture is defined, created, and transmitted through interaction, it is not interaction itself, but the content, meanings, and topics of interaction. In Herskovits's (1948:625) definition:

though a culture may be treated by the student as capable of objective description, in the final analysis it comprises the things that people have, the things they do, and what they think.

Sociologists and anthropologists who have examined culture have found specifying the cultural patterns of an entire society to be an insurmountable task. While the attempts have been noble, the size of the undertaking has produced disappointing results for the goal of understanding the dynamics of cultural creation and tradition. If we take Blumer's premise seriously, it may be more suitable to begin our examination with interaction, and therefore to consider culture creation as an outcome of this interaction (e.g., Hare

* Direct all communications to: Gary Alan Fine, Department of Sociology; University of Minnesota; Minneapolis, MN 55455.

This article has benefited enormously from the critical reading of many, especially Robert Freed Bafes, Pat Lauderdale, Sherry Kleinman, Harold Finestone, and Jim Thomas. The views expressed, however, represent those of the author. Part of the research was supported by National Science Foundation Grant No. SOC75-13094. Data from the Maple Bluff site were collected by Harold Pontiff.

et al., 1965:v). The prototype of these interacting units is the small group, and the prevalence of groups in society suggests that it may be useful to conceive of culture as being part of the communication system of these interacting units (Spector, 1973). Despite the focus on the group, we recognize that this does not imply that shared understandings which transcend interactive networks do not exist; however, models are necessary to indicate how information diffuses from the originating group (see Fine and Kleinman, 1979). Although cultural elements can transcend the boundaries of interacting groups, it frequently occurs that cultural elements are experienced within the context of the small group. Thus, one may argue that most culture elements are experienced as part of a communication system of a small group even though they may be known widely.¹ The experience of knowing and using culture is inevitably tied to situational contexts of group life. To understand the dynamics of cultural creation and cultural change, we must analyze this knowledge within the context of its mode of transmission.

In focusing on the interacting unit, I argue that every group has to some extent a culture of its own, which I shall term its *idioculture*.² Idioculture consists of a system of knowledge, beliefs, behaviors, and customs shared by members of an interacting group to which members can refer and employ as the basis of further interaction. Members recognize that they share experiences in common and these

experiences can be referred to with the expectation that they will be understood by other members, and further can be employed to construct a social reality. The term, stressing the localized nature of culture, implies that it need not be part of a demographically distinct subgroup, but rather that it is a particularistic development of any group in the society.

While the implications of conceiving of small groups as having cultures have not been considered adequately, some researchers have indicated the usefulness of this construct. Hollingshead (1939:816) in his discussion of behavior systems maintained that:

Persons in more or less continuous association evolve behavior traits and cultural mechanisms which are unique to the group and differ in some way from those of other groups and from the larger socio-cultural complex. That is, every continuing social group develops a variant culture and a body of social relations peculiar and common to its members.

Lee (1954) and Gordon (1964) both suggest that the concept of a group culture fills a void in sociological conceptions of culture. Despite anthropological and folkloristic ethnographies (Leemon, 1972; Adams, 1971; Dundes and Fallasi, 1975) and experimental manipulations of laboratory groups (Rose and Felton, 1955; Jacobs and Campbell, 1961; Weick and Gilfillan, 1971; MacNeil and Sherif, 1976), little attention has been given to the usefulness of this concept, and how social constraints influence the creation and continued usage of cultural items in small groups.

My goal in this paper is simple. After briefly suggesting several theoretical rationales for the idioculture construct, I shall examine several perceived characteristics of cultural items which affect their creation and usage, and, thus, the development of idiocultures within a set of small groups. Hopefully this analysis, having grounded the cultural creation process in interaction, eventually will allow for a specification of the dynamics involved in the social construction of cultural elements in larger groupings and societies.

¹ Cultural elements disseminated by the mass media (television, radio) or in crowd settings (rock concerts, rallies, sports events) are exceptions. However, even in these isolated or mass settings Fine (1977) suggests that audiences are not composed of discrete individuals, but of a collection of small groups. These small groups help to structure the meaning of the event for individuals in attendance. Printed matter generally is notable for the noninteractional acquisition of cultural knowledge—although even here the material is often discussed with others.

² *Idio* derives from *idios*, the Greek root for *own* (not *ideo*). It was felt necessary to coin a new term because the most logical phrase, that of *group culture*, has been used previously with several quite different meanings (Thelan, 1954; Rossel, 1976; McFeat, 1974).

LITTLE LEAGUE IDIOCULTURES

In order to explicate how an idioculture develops, it is necessary to base the discussion on empirical observations. While the examination of any set of continuing small groups could provide the material for this analysis, the data discussed in this paper derive from three years of participant observation research conducted with Little League³ baseball teams in five communities in New England and Minnesota. Little League baseball teams were chosen for observation because they combine the two major elements of group life: task orientation (winning games) and socioemotional orientation (peer friendship).⁴ In addition, because Little League is seasonal, the creation, development, and dissolution of the team culture could be observed. While some traditions continue from year to year, as approximately one-half a team's personnel returns, each year essentially represents the creation of a new idioculture.

The teams examined consisted of 12 to 15 preadolescents, coached by one to three adults. Over the course of a three-month season, teams play 14 to 21 games and, including practice time, spend about ten hours a week together. During the seasons the author (and, in one league, a research assistant) interacted with players

and coaches (Fine and Glassner, 1979), although the observer had no formal role, such as coach or umpire. Within each league two teams were observed in detail, and during practices and games the observer remained with the team in the dug-out or on the field. The five leagues examined were: (1) Beanville,⁵ an upper middle-class professional suburb of Boston, Massachusetts; (2) Hopewell, an exurban township outside the Providence, Rhode Island metropolitan area—consisting of small towns, beach-front land, farms and a campus of the state university; (3) Bolton Park, an upper middle-class professional suburb of Saint Paul, Minnesota, similar to Beanville except for geographical location; (4) Sanford Heights, a middle- to lower middle-class suburb of Minneapolis, consisting primarily of developers' tract homes; and (5) Maple Bluff, an upper middle-class neighborhood within the city limits of Saint Paul, Minnesota. The latter teams were examined by a research assistant. In Beanville participant observation was conducted during two seasons, while in the other sites observation was confined to a single season.

RATIONALE FOR THE IDIOCULTURE CONSTRUCT

Because discussions of culture have not been grounded in observation of interaction or conceived of in terms of behavioral dynamics and needs of groups, culture has not been represented adequately. By recognizing that groups develop a culture of their own, some of the sterility of much current small-group research can be avoided. Five arguments are proposed here for the utility of the construct of idioculture in sociological research.

1. *Specificity of Cultures*

Since small groups are observable and are capable of being questioned, culture need not remain the amorphous phenomenon which it tends to be in social an-

³ The Little League organization was established in 1939 for the purpose of allowing boys to play organized baseball under the supervision of qualified adults. The organization has grown enormously since then to the point where it now has over 600,000 players between the ages of nine and 12, and about 5,000 leagues. As a result of court suits from equal rights groups, the League changed its policy in 1974 to admit both boys and girls into its programs. However, the ten teams examined in-depth in this project consisted only of boys.

⁴ While the decision to use Little League baseball teams to exemplify cultural production may appear somewhat frivolous, such groups are as important to their participants as most adult groups. For the months that the Little League season is in progress, baseball becomes a central preoccupation of these boys (Stone, 1978). Further it is the problem that one studies which determines the significance of the work, not the "substantive" concern, in this case Little League baseball. If these groups are comparable to other groups in their process of cultural production (as I claim), they are a legitimate subject for study. I am attempting to generalize to all groups, not simply preadolescent congeries.

⁵ All names included in the report of the Little League research are pseudonyms.

thropology and macrosociology. The relatively limited extent of the particularistic aspects of small-group culture lends itself to examination by the participant observer, and thus idiocultures can be specified by the researcher to a much greater extent than is true for either societal cultures or subcultures. Within our Little League study it is possible to compose a relatively complete description of the culture of a team, although the depiction of a culture of a small group of small boys is a rather extensive undertaking (Fine, n.d.). Such a compilation will include the particular team rules developed by the group of boys and their coaches, the regular joking topics, nicknames, and modes of appropriate behavior adopted by the boys. A comprehensive attempt to compile preadolescent culture is an impossible task, although several useful partial collections have been published (e.g., Opie and Opie, 1959).

2. Comparative Analysis of Groups

The concept of idioculture allows for the development of a cultural anthropology of small groups (McFeat, 1974). Social scientists typically have little understanding of how closely related groups differ from each other. These groups may appear to have common goals (winning baseball games), comparable memberships (chosen by means of a player draft in which all adult coaches take turns selecting players), and similar environments (playing and practicing in the same locations), yet groups develop unique cultures and different styles of behavior. Here, again, the examination of differences among groups requires considerable space, more than is possible in this article. However, it is clear that the cultures that teams develop are a result of social and environmental contingencies, combined with the social definitions which emerge in group interaction. Once the idioculture is developed (a process occurring from the beginning moments of the group), it shapes future actions and collective meanings. By comparing groups in terms of their experiences and shared meanings

as influencing their culture, one is able to explicate the process of cultural differentiation—a process Fischer (1968) has termed *microethnography*. In our Little League research early victory or defeat (a social contingency) and the definition of that outcome have a considerable effect on structuring the team culture. Teams that perceive themselves as successful typically develop a more robust culture of baseball-related items than the culture of early losers.

3. Cultural Creation and Diffusion in Societies and Subsocieties

Understanding the dynamics of the creation of an idioculture may have significant implications for understanding cultural creation in larger social units. In observing a small group one can pinpoint precisely and with confidence the circumstances under which an item of culture was created. This cultural creation process may be similar to that for cultural products which reach a wider audience. Many cultural products are created in group situations (e.g., scriptwriters' conferences, theatre ensembles or scientific research groups) (Fine, 1977). Informal cultural products, such as jokes, slang, or superstitions, can develop in the course of natural interaction in a group, and subsequently may "catch on," spread beyond the boundaries of the group to which it originally belonged, and become part of a culture or subculture (Fine and Kleinman, 1979). Such mass diffusion does not occur very frequently, and our research does not allow us to cite any example in which a cultural object created by one of the observed teams entered into the national preadolescent subculture, but on several occasions cultural traditions crossed team lines. One team in Bolton Park, for example, started standing on the dugout bench and cheering. This practice subsequently was adopted by two of the other six teams, through acceptance by the high status players on those teams, and the diffusion rapidly spread to their teammates. Such examples of diffusion suggest general processes of cultural transmission (e.g., the two-step flow of

communication) (Katz and Lazarsfeld, 1955).

4. *Groups As Cultural Units*

The idioculture construct indicates that groups do not exist in a content-free context, but are continuously engaged in the construction of a social reality, a history (McBride, 1975), and a sense of meaning (Berger and Luckmann, 1967). Small-group research typically portrays groups as data points, and examines group dynamics divorced from the content of talk or action. Following interactionist theory, we assume that cultural content derives its shared social meaning through interaction, rather than through an a priori assignment of meaning. Groups negotiate meanings, and this ongoing negotiation structures the culture of groups. The content of talk and behavior is thus central to the comprehension of group dynamics, and this understanding can occur only through a contextual examination of culture. The nicknames of Little Leaguers—Big Rides, Shrimppo, Thunderfoot, Train, or Maniac—imply that shared meanings of players exist and the replacement of nicknames over time suggests that these meanings are not necessarily static. Without a consideration of meaning, behavior is “meaningless”—a point experimental examinations of small groups ignore or downplay.

5. *Culture As Mediation between Environment and Action*

Idioculture is proposed as a mediating element between constraints external to the group and the behavior of the group in dealing with these constraints. It is the process by which collective decisions are selected, and thus permits an understanding of how a group increases its sense of “groupness,” cohesion, and commitment. Further, as Berger and Luckmann (1967:87) suggest, sub-universes of meaning (idiocultures) provide for the differentiation of group members from outsiders. Differences in behavioral response to social stimuli and

social integration have been shown convincingly to relate to the cultural values of small communities (Vogt and O’Dea, 1953; Rogers and Gardner, 1969; DuWors, 1952). The culture of a group provides a set of behavioral options for the group to choose after the meaning of an external event has been determined. Thus, in this Little League research, teams responded idiosyncratically to potential victory (by special cheers) and defeat (by personalized insults). The team achieves consensus on whether the game is close, is being lost or won; then members choose from the group’s repertoire of cultural options available given a situational definition.

Each of these five explanations deserves a full explication and, although this article only attempts to provide for an understanding of factors influencing the social production of idiocultural elements, a return to the above arguments in future reports is necessary.

THE SOCIAL PRODUCTION OF IDIOCULTURE

At the inception of any group, an idioculture does not exist; however, the formation of a culture may occur from the opening moments of group interaction. When individuals meet, they begin to construct a culture by asking for names and other biographical points which can be referred to subsequently (Davis, 1973). Eventually idioculture becomes self-generating, and direct solicitation and reciprocal inquisition are no longer necessary for social solidarity. Over time, rules are established, opinions expressed, information exchanged, and members experience events together. Sherif and Sherif (1953:236–7) suggest that:

When individuals having no established relationships are brought together in a group situation to interact in group activities with common goals, they produce a group structure. . . . This group structure implies positive in-group identifications and common attitudes and tends, in time, to generate by-products or norms peculiar to the groups, such as nicknames, catchwords, ways of doing things, etc.

To be sure, not every element of a group's conversation or behavior will be part of the idioculture. Idioculture is augmented if an experience occurs or a piece of information is transmitted *within* the group (i.e., in the presence of more than one group member) and is perceived as an event or statement which can be referenced legitimately and meaningfully (see Garfinkel, 1967:38-41)—i.e., the occurrence is worthy of retrospective notice. Thus, in Little League, a routine hit or catch, being "taken for granted," usually will not make an impact on the group's idioculture, but may become notable if the situational constraints give the event a significance beyond its expected lack of impact (e.g., a catch by a poor outfielder at a crucial point in a game—an event which did produce a nickname in one Little League scenario).

The specific elements of an idioculture are not generated randomly through chance statements and events, but are accessible to sociological analysis. However, it would be inaccurate to suggest that the cultural elements of a group are inevitably produced by external determinants over which members have no control. Members construct meanings given a set of social constraints which are perceived as affecting the boundaries of permissible behavior. While the content of cultural elements needs to satisfy five analytical criteria to become incorporated into an idioculture, these five criteria are not external stimuli which inevitably shape the behavior of individuals or groups. Rather, these are components of the sense-making systems of individuals; the specific implications of these criteria are negotiated in group interaction. These processes essentially operate as filters (Siman, 1977), which constrain cultural options. They provide strictures within which freedom of selection operates.

The five filtering elements are proposed to explain the selection and continued salience of any given item in a group's idioculture—that the item be perceived as Known, Usable, Functional, and Appropriate in terms of the group's status system, and Triggered by some experienced event. These factors can be schematized

roughly in an ordered relationship by a Venn diagram according to the number of *potential* items which meet each criteria: $K > U > F > A > T$. The manner in which each of these filters will be interpreted is a situational achievement for members, and although I shall take for granted their operation in this discussion, I recognize that the interpretation of each of them is grounded in their own set of situational negotiations.

Known culture. The first constraint on whether a potential culture element will become part of the group idioculture is that the item or components of the item be known previously by at least one member of the group. This pool of background information I shall term the *known culture* of the group.

This perspective is congruent with Becker and Geer's (1960) argument that the manifest culture of a group will be derived from the latent cultures of members. While the culture content emerges from group interaction, latent culture or the recall of prior knowledge will affect the form of these culture elements, although not the specific content. Culture content is synthesized from remembrances of past experiences. Since members have access to other idiocultures (or latent cultures) through previous or concurrent memberships, the range of potentially known information may be extensive.

Among Sanford Heights teams, a ball which was hit foul over the backstop was known as a "Polish Home Run." Such a cultural item would have been meaningless had it not been for latent cultural items—what a home run is, and the symbolic opposition of hitting a ball straight over the outfield fence and hitting it backward over the backstop. In other words, hitting the ball over either *end* of the field was a home run (and this was not said of balls which curved outside a foul line). The existence of the item also required a knowledge of social stereotypes—that "Polish" is an ethnic slur—implying backwardness or incompetence. Without this cultural knowledge such an identification of this type of foul ball would not have become a part of the culture of these preadolescents. Likewise,

referring to other players on the basis of their uniform color as a "green bean" or "Chiquita," as was done in Hopewell, suggests that cultural elements are dependent upon prior knowledge derived from external sources.

Creativity poses no particular problems for this perspective since created items are not developed *de novo*; rather, they are novel combinations of previously familiar elements (e.g., Hebb, 1974). These combinations may be given meanings different from that of any constitutive element by the members of the group. Thus, players on the Maple Bluff White Sox developed a dress code which was loosely modeled on observation of major leaguers, although not identical to it. Before one practice in Sanford Heights several players were hanging on the backstop at the practice field while one of their teammates shook the fence as hard as possible, an activity he termed the *Chinese pain shake*, a term apparently created spontaneously. While the term may never have been uttered before, its antecedents exist in that speaker's latent culture: notably the association of Chinese with torture (e.g., the Chinese water torture), and the earthquakes which had affected China during this period and to which this activity was similar. Thus, the creation of this cultural item, although seemingly an idiosyncratic construction, can be interpreted in terms of previous knowledge. The term for that behavior "makes sense" in terms of the web of meanings accessible to those individuals.

The larger the percentage of boys who share a latent cultural element (e.g., the behavior of certain professional baseball players in wearing their hats or socks in a particular style), the more likely will this knowledge or some transformation of it come to characterize the group. This unstated shared knowledge allows newly "created" cultural items to be more readily meaningful for the group.

Usable culture. The second criterion for inclusion in a group's idioculture is that a potential item be perceived as part of the members' *usable culture*—that is, mentionable in the context of group interaction. Some elements of the latent or

known culture, although shared by members of a group, may not be shared publicly because of sacred or taboo implications.

The usability of a cultural element is not a result of absolute criteria, but of the social meanings supplied by the group members. Members' personalities, religion, political ideology, or morality may influence the situational viability for a cultural item. Thus, in Bolton Park one star player objected strongly to another player's reference to the "fucking umps"; another player on that team chastised a teammate for uttering the epithet "Jesus Christ" and taking the Lord's name in vain. On other teams, however, such usage was legitimate and was not sanctioned. Observation suggests that teams do have different moral standards for propriety; this is due to their adult and child personnel, and the extent to which these personnel are willing to express their beliefs to shape public behavior.

In Beanville, one of the two teams examined placed a heavier emphasis on religion than did the other, although both teams were largely Catholic. Possibly because of the players or as a reification of the team name, the Angels indicated a greater interest in religion than did the Rangers. Members of the Angels inquired of each other why they missed church. The Rangers never publicly mentioned church, but on several occasions players did joke about abortions. While only a weak inference exists that similar jokes could not have occurred among the Angels, the presence of such jokes seems unlikely and inappropriate. "Dirty" or sexual jokes were only spread among groups of Rangers (outside the earshot of their coach), and not in my observation among the Angels.

Similarly, on one team in Hopewell, racial epithets were common; one player made reference to blacks as "jungle bunnies," while another commented "all the people who live around me are niggers," and a third termed a Puerto Rican adolescent "half nigger and half white." While many of the boys in the League were undoubtedly aware of these terms, only on this one team were they spoken with any

regularity, and as part of the normative order of the team. It is difficult to pinpoint why these comments were usable here and not elsewhere, but two years previously this team had a black manager who apparently was not well-liked, and this may have accounted for the public expression of racial resentment after he left. This is compounded by the situation that the two adults who coached this team did not appear to be greatly upset when this language was used. For example, we find this disquieting colloquy:

(A black boy pitching for the opposing team has just hit one of their batters)

Justin: "Come on, you nigger."

Coach: "Don't be stupid."

Justin: "That's what he is."

Assistant Coach: "You'll get thrown out of the game."

Justin: "I don't mind if he calls me whitey."
(Field notes)

The issue here is the reaction of the coaches in establishing a definition of usability. In this situation, and others, these adults see racial abuse as a *strategic* problem. Boys should not use these terms because other adults will sanction them, or because (on other occasions) it was said the targets may attack the speaker. The reactions of the adults, while not encouraging these comments, do not make them unusable, and they remained a central part of the team's culture throughout the summer.

Tied to usability is situational appropriateness. Norms for prescribed and proscribed behavior tend to be contextually bounded. An item of culture may be appropriate only in certain circumstances, such as when the coach is absent. Typically, when group members are in the presence of outsiders the expressible elements of the team's idioculture are curtailed. This is evident in regard to preadolescents who refrain from telling "dirty" jokes in the presence of adults or strangers. Jokes comparing aborted babies to ripe, red tomatoes among the Beanville Rangers were limited to situations in which adults, other than the author, were not present. Likewise, one boy on the Sanford Heights Dodgers was

called "Mousey" by his affectionate mother. This nickname was used by peers in his absence, since he was a high status team member and it was a nickname he particularly disliked. This dislike only made the nickname more precious for his teammates.

Functional culture. A third factor influencing the likelihood of an item being incorporated into a group's idioculture is its perceived congruence with the goals and needs of some or all group members, and whether it is defined as facilitating the survival and successful operation of the group as a unit (Pellegrin, 1953). Items which are consistent with these ends are termed the *functional culture* of the group. Thus, potential cultural elements which are known and usable by members may not become part of the group's idioculture if not recognized as supportive of the needs of the group or its members. In some cases of cultural innovation, especially in regard to competing cultural elements related to task goals, a cultural process metaphorically akin to natural selection may operate.

Some interactionists argue that culture develops as a response to shared problems (Becker and Geer, 1960; Hughes et al., 1968; Spector, 1973); they claim that group culture is functional, and that much of culture production is directly related to group problem solving. This proposition is supported by an examination of group culture in a laboratory setting which indicates that problem-solving strategies that continue across time are those which have been most effective (Weick and Gilfillan, 1971).

Among Little League baseball teams, the rules and restrictions which team members enforce indicate the functional properties of group culture. The Beanville Rangers originated and enforced an operating procedure that the team would take batting practice (a desirable activity for the players) in the order that players arrived. This procedure encouraged promptness and, on occasion, the entire Ranger team arrived at the field before any members of the opposing team. The Rangers particularly were characterized by team spirit and friendships, as players knew each other informally through this

pregame activity; it served as a mechanism for minimizing arguments about the batting practice order. The preadolescents, rather than the coaches, structured the team's behavior, and the procedure strengthened the position of the team's preadolescent leader who lived a block from the field and always arrived early. Prior to the establishment of this procedure, batting order was determined haphazardly—mostly by whomever was most insistent at the moment, rather than by a systematic ordering procedure by the coach. It was because the ordering of batting practice had been problematic for the Rangers that such a rule was functional as a problem-solving mechanism.

A Hopewell team prohibited chewing gum on the playing field because one of their players had almost choked on a piece of gum after he ran into another outfielder when attempting to catch an unexpected fly ball. Other teams in the league did not have a similar rule, because the issue was never salient. For an item of culture to be overtly functional to a group, the group must define itself, either implicitly or explicitly, as having a problem, and then the cultural item may be proposed as a solution to the problem.

Some cultural items do not directly address problems in a group, but still may be said to be functional in that they achieve group goals such as entertainment or social solidarity. While they may not be proposed in response to interactional difficulties, these idiocultural items facilitate group functioning. The creation of cultural prescriptions and proscriptions is tied directly to their functional character. The origins of nonovertly functional culture items may not be related directly to the needs of the group, but their continued usage is.

Appropriate culture. Some potential elements of a group's culture, while functional for satisfying group goals or personal needs, do not occur or continue because they undermine the group's social structure in not supporting the interpersonal network and power relations in the group. Those potential cultural elements which are consistent with the patterns of interaction of the group are the *appropriate culture* of the group. A cultural item

which expresses hostility toward a well-liked or legitimately powerful individual may be known, usable, and even functional (in that hostility may need to be expressed), yet may be inappropriate unless the group structure is altered (see Hollander, 1958).

This becomes clear in the case of nicknames. Many nicknames are evaluative in context, and a nickname must fit the target's defined status in the group. During the first year of observation of the Beanville Rangers, one team member, Tom, acquired the nickname "Maniac," based upon a linguistic play on his last name, and on his physical awkwardness on the baseball diamond. That year he was an eleven-year-old substitute outfielder. When the team members were asked to name their three best friends on the team during the middle of the season, Tom was named only by one of the 12 other boys answering the sociometric questionnaire (with 15 players on the team). According to sociometric ranking and formal status, Tom is a low-status team member. The question formulated that season was: What would happen the following year when he was 12 years of age, and presumably would be one of the better players on the team? The following year, Tom started most of the Rangers' games at third base, was one of the best batters on the team, and was located in the middle of the team's status hierarchy. In sociometric ratings both at the beginning and the end of the season, Tom was named by four of the 14 other players as one of their three best friends on the team. His previous nickname, "Maniac," was no longer in circulation, although Tom and other team members recalled its presence during the previous year. Tom's new nickname was "Main Eye," again a play on the boy's last name, though with dramatically different symbolic connotations.

A similar example occurred the following year in Sanford Heights. One of the eleven year olds on the Giants was known as a particularly poor baseball player, having gone hitless in his previous year in the league. As a function of his weak baseball skills and his somewhat isolated position on the team, he was called

"Smell-ton," again a play on a surname. During the first week of the season, much to everyone's surprise—his own included—he hit a Grand Slam home run. His nickname "Smell-ton" was forgotten and, for the rest of the season, his teammates called him Jim. Status can be usefully conceived of as constraining the creation of nicknames, although the labeling effect of nicknames and other culturally identifying information on group position cannot be denied. Nicknames are not the only cultural items subject to status considerations; pranks and practical jokes may only be performed on low status members, and rules may be constructed so that they support the prerogatives of the older players—such as determining who should coach on the bases (high status boys) or who should go to the refreshment stand for water (isolates).

In addition to being affected by status inappropriateness, acceptance of a cultural item may be contingent on the nature of sponsorship. Potential cultural items are more likely to be accepted into a group's idioculture when proposed by a high status member (Sherif and Sherif, 1953:252). This clearly applies when the coach proposes some cultural element; while these are not invariably accepted by his preadolescent charges, they do stand a comparatively greater likelihood of acceptance. Thus, in Hopewell, one set of coaches suggested that before a game their team should form a circle, that team members place their hands in the middle of the circle and, when the coach said "Let's go," that players should buoyantly raise their arms in unison. This ritual characterized the team throughout the season. Another coach in Maple Bluff ritually asked his team what three things they needed to win, and they vigorously responded, "Hustle, pride and class;" a third coach in Beanville would refer to a weak hit as something which his grandmother could hit better than, and so the comic image of this middle-aged man's grandmother entered the team's culture.

High status players, like coaches, find their personal status accorded the traditions they wish to establish. Several members of the Beanville Rangers got

wiffles (short haircuts) after Wiley, the second most popular boy on the team, got one and was proud of it. This fad continued (with one or two boys newly shaved each day) until Rich, the most popular boy on the team, publicly claimed that he thought the haircut looked stupid, although he deliberately excluded Wiley from this evaluation, saying that he looked good. After Rich's announcement, only one low status boy had his hair cut in that fashion, and the team, highly critical of his tonsorial style, said it looked horrible and, further, it was not a *real* wiffle. Similar sociometric processes affected clothing conformity, such as wearing wristbands or sneakers at games, and wearing shorts or removing one's shirt at practice.

Triggering event. The range of *potential* cultural items which qualify as known, usable, functional, and appropriate is extensive, and some interactional mechanism (or filter) is necessary to account for which items enter the group's cultural repertoire. The concept of a *triggering event* is postulated as an explanatory device to determine selection. Some bit of interaction will provide a "spark" which produces the specific content of the idioculture. This event can consist of any action or statement which produces a response in the group, similar to Smelser's (1962) concept of a precipitating factor for collective behavior. A member's new haircut may be sufficient to spawn a new nickname ("Kojak," "Buzz Conroy," "Peach Fuzz"). A miscue may provide the impetus for a joking sequence that remains part of group lore. A threat to the group may produce a legend, new norm, or a prescription for group action.

While any triggering event may theoretically produce idioculture, some events recur and, in those cases, items of idioculture are particularly likely to be produced and, once produced, will more likely be relevant to the group as they are repeatedly functional and appropriate. Thus, the superior batting of one Beanville youngster led to him being called "Superstar," and the opposite talent of a boy in Bolton Park produced his nickname: "Strike Out King." These nicknames are sociometrically appropri-

ate, as well as being frequently triggered, because of the differential athletic achievements of these two youngsters.

In addition, triggers which are notable or unusual are especially likely to produce idioculture.⁶ Support for this assertion is provided by Gmelch (1971) in an examination of baseball superstitions in the professional leagues; he discovered that rituals emanated from particularly good performances, while behavioral taboos resulted from notably poor performances. One Bolton Park coach's old Impala was called a "Cadillac" after a foul ball nearly hit it in practice and he jokingly told them not to hit his Cadillac. The term caught on, and the rusty car was called a "Cadillac" from that point on—the notable event of a wayward foul ball structured the culture creation of the team. As Gmelch notes, notable events also effect taboos. One Hopewell coach brought his team red, white, and blue wristbands on opening day, in order to give the team some sense of unity and specialness. However, the team, which was expected to win the championship that year, lost its first game by the embarrassing score of 12–3. After the game, the players decided that the wristbands were unlucky and from that day no member of the team wore a wristband, and the team eventually won the league championship.

Triggering events and their effects are difficult to predict in advance in natural settings, as they are emergent from social interaction. However, in an experimental setting, triggering events can be systematically arranged by the researcher and their effects upon the content of group culture examined. This constitutes a valuable direction for research in this area.

Summary. Five elements—the known culture, the usable culture, the functional culture, the appropriate culture, and the triggering event—influence the specific

content of a group's idioculture. Different configurations of these five factors suggest how groups come to differ in their culture, and why specific forms appear and remain in particular groups. To this point, cultural forms have been analyzed using a single characteristic; in order to indicate the combined impact of all five we shall examine the creation and usage of one particular cultural item considering all factors.

During the middle of the season, the Beanville Rangers created and enforced a rule that no player could eat ice cream while sitting on the bench during a game. This rule was triggered by a combination of circumstances: it occurred in the context of a game in which the Rangers, by that time accustomed to victory, were being beaten. On the bench, one of the nonplaying low status players was eating an ice cream cone. This situation triggered the decision by the high status, older⁷ players (not the coach) that ice cream could not be eaten on the bench (although gum could be chewed). The rule was known in that it was compatible with the policy and perspectives of professional sports teams. It was usable in that it did not deal with any tabooed or threatening areas of children's culture, and it is comparable to the rules that children frequently make in interaction with each other (Piaget, 1932; Cooley, 1902). The rule was functional in relieving the frustration that the older players felt during that game, and in tending to get the attention of the younger members on the team. Further, the presence of a set of rules or rituals may create a sense of group cohesion (Cartwright and Zander, 1953) and satisfaction (Borgatta and Bales, 1953). Finally, it was appropriate in that it was propounded by the high status members to control the low status members. Later in the season an older, high status player did eat ice cream on the bench, and was not

⁶ Kelly (1967) has noted that distinctiveness or uniqueness tends to create attributions focusing on the characteristics or properties of the distinctive other. In the case of persons, these attributions generally refer to dispositions. Kelly also notes that consistency of behavior over time or modality (as in the case of recurring triggering events) produces attributions based on the characteristics of the other.

⁷ Age (in years) and the percentage of the total number of sociometric choices received (with the opportunity for each boy to name three team members as friends) correlated $+ .48$ ($p < .05$) at the beginning of this season, $+ .59$ ($p < .02$) in the middle of the season, and $+ .61$ ($p = .01$) at the end of the season.



criticized by other team members, although the rules remained for other team members.

CONCLUSION

Sociologists have had considerable difficulty in analyzing the position of culture in society because of a general unwillingness to examine culture in its behavioral context. Culture, like all aspects of social life, is situationally grounded and, thus, sociologists should bracket grand theorizing about culture in favor of examining it in situ. For both theoretical and methodological reasons, an examination on the level of the small group seems desirable. Small groups can be examined adequately, and they represent locations where much culture, subsequently spread to larger social units, has its origin. This procedure, in addition to increasing understanding about the social role of culture itself, also has the potential for bettering knowledge about small groups. Groups should not be conceived, as they sometimes have been in the experimental small-groups literature, as content-free collections of individuals. A content-oriented approach to small groups allows for a systematic analysis of group differences.

In this article, I have been concerned with exemplifying five perceived features of culture content which affect the content of group cultures. It is important to emphasize that these five components produce effects through the interactional negotiation of members, and this negotiation is based upon the shared meanings that these topics of communication have for members. Indeed, each of these five components is itself grounded in situational meanings. Culture is a construction based upon the consensual meaning system of members; it comprises the interactional products that result from a verbal and behavioral representation of that meaning system.

All groups, as they share experience, will develop a particularistic culture. Each of these cultures provides a task for the humanist as well as the social scientist. While we have emphasized the value of

understanding these systems for the comprehension of the dynamics of groups and cultural usage, we have deliberately overlooked the fact that these are also aesthetic systems, and are a product of "artful" communication. At this point we must share our goal of understanding human behavior with the folklorist, the critic, and the poet.

REFERENCES

- Adams, Charles C.
1971 *Boontling: An American Lingo*. Austin: University of Texas Press.
- Becker, Howard S. and Blanche Geer
1960 "Latent culture: a note on the theory of latent social roles." *Administrative Science Quarterly* 5:304-13.
- Berger, Peter and Thomas Luckmann
1967 *The Social Construction of Reality*. New York: Anchor.
- Blumer, Herbert
1969 *Symbolic Interactionism*. Englewood Cliffs: Prentice-Hall.
- Borgatta, Edgar G. and Robert Freed Bales
1953 "Task and accumulation of experience as factors in the interaction of small groups." *Sociometry* 16:239-52.
- Cartwright, Dorwin and Alvin Zander (eds.)
1953 *Group Dynamics*. Evanston: Row, Peterson.
- Cooley, Charles H.
[1902] *Human Nature and the Social Order*. New York: Schocken.
- Davis, Murray S.
1973 *Intimate Relations*. New York: Free Press.
- Dundes, Alan and Alessandro Falassi
1975 *La Terra in Piazza: An Interpretation of the Palio of Sienna*. Berkeley: University of California Press.
- DuWors, Richard E.
1952 "Persistence and change in local values of two New England communities." *Rural Sociology* 17:207-17.
- Fine, Gary Alan
1977 "Popular culture and social interaction." *Journal of Popular Culture* 11:453-66.
n.d. "With the boys: a social psychological investigation of Little League baseball." Manuscript in preparation.
- Fine, Gary Alan and Barry Glassner
1979 "Participant observation with children: promise and problems." *Urban Life* 8:153-74.
- Fine, Gary Alan and Sherryl Kleinman
1979 "Rethinking subculture: an interactionist analysis." *American Journal of Sociology* 85:1-20.
- Fischer, J. L.
1968 "Microethnology: small-scale comparative studies." Pp. 375-87 in J. A. Clifton (ed.),

- Introduction to Cultural Anthropology. Boston: Houghton Mifflin.
- Garfinkel, Harold
1967 *Studies in Ethnomethodology*. Englewood Cliffs: Prentice-Hall.
- Geertz, Clifford
1973 *The Interpretation of Cultures*. New York: Basic Books.
- Gmelch, George J.
1971 "Baseball magic." *Trans-Action* 8:39-41, 54.
- Gordon, Milton M.
1964 *Assimilation in American Life*. New York: Oxford University Press.
- Hare, A. Paul, Edgar Borgatta and Robert Freed Bales (eds.)
1965 *Small Groups*. Rev. ed. New York: Random House.
- Hebb, Donald O.
1974 "What psychology is about." *American Psychologist* 29:71-87.
- Herskovits, Melville
1948 *Man and His Works*. New York: Random House.
- Hollander, Edwin P.
1958 "Conformity, status, and idiosyncrasy credit." *Psychological Review* 65:117-27.
- Hollingshead, August B.
1939 "Behavior systems as a field for research." *American Sociological Review* 4:816-22.
- Hughes, Everett C., Howard S. Becker and Blanche Geer
1968 "Student culture and academic effort." Pp. 372-85 in R. R. Bell and H. R. Stub (eds.), *The Sociology of Education*. Rev. ed. Homewood: Dorsey Press.
- Jacobs, R. C. and Donald T. Campbell
1961 "The perpetuation of an arbitrary tradition through several generations of a laboratory microculture." *Journal of Abnormal and Social Psychology* 62:649-58.
- Katz, Elihu and Paul F. Lazarsfeld
1955 *Personal Influence*. New York: Free Press.
- Kelly, Harold
1967 "Attribution theory in social psychology." Pp. 192-238 in D. Levine (ed.), *Nebraska Symposium on Motivation*. Lincoln: University of Nebraska Press.
- Lee, Alfred McClung
1954 "Attitudinal multivalence in relation to culture and personality." *American Journal of Sociology* 60:294-9.
- Leemon, Thomas A.
1972 *The Rites of Passage in a Student Culture*. New York: Teachers College Press.
- MacNeil, Mark K. and Muzafer Sherif
1976 "Norm change over subject generations as a function of arbitrariness of prescribed norms." *Journal of Personality and Social Psychology* 34:762-73.
- McBride, Glen
1975 "Interactions and the control of behavior." Pp. 415-23 in A. Kendon, R. Harris, and M. Key (eds.), *Organization of Behavior in Face-to-Face Interaction*. The Hague: Mouton.
- McFeat, Tom
1974 *Small-Group Cultures*. New York: Pergamon Press.
- Opie, Iona and Peter Opie
1959 *The Lore and Language of School Children*. London: Oxford University Press.
- Piaget, Jean
[1932] *The Moral Judgment of the Child*. New York: Collier.
1962 *York: Collier*.
- Pellegrin, Roland J.
1953 "The achievement of high status and leadership in the small group." *Social Forces* 32:10-6.
- Rogers, William B. and R. E. Gardner
1969 "Linked changes in values and behavior in the Cut Island Bahamas." *American Anthropologist* 71:21-35.
- Rose, Edward and William Felton
1955 "Experimental histories of culture." *American Sociological Review* 20:383-92.
- Rossel, Robert Denton
1976 "Micro-history: studying social change in the laboratory." *History of Childhood Quarterly* 3:373-400.
- Sherif, Muzafer and Caroline Sherif
1953 *Groups in Harmony and Tension*. New York: Harper.
- Siman, Michael L.
1977 "Application of a new model of peer group influence to naturally existing adolescent friendship groups." *Child Development* 48:270-4.
- Smelser, Neil J.
1962 *Theory of Collective Behavior*. New York: Free Press.
- Spector, Malcolm
1973 "Secrecy in job seeking among government attorneys: two contingencies in the theory of subcultures." *Urban Life and Culture* 2:211-29.
- Stone, Gregory
1978 "Sport and community." Unpublished manuscript.
- Thelen, Herbert H.
1954 *Dynamics of Groups at Work*. Chicago: University of Chicago Press.
- Vogt, Evar Z. and Thomas O'Dea
1953 "Cultural differences in two ecologically similar communities." *American Sociological Review* 18:645-54.
- Weick, Karl and D. P. Gilfillan
1971 "Fate of arbitrary traditions in a laboratory microculture." *Journal of Personality and Social Psychology* 17:179-91.

VERTICAL DIFFERENTIATION AMONG OCCUPATIONS*

JOE L. SPAETH

University of Illinois, Urbana-Champaign

American Sociological Review 1979, Vol. 44 (October):746-762

Research on the socioeconomic achievement process has begun to generate anomalous findings, many of which involve occupational status as conventionally measured. Such anomalies include findings on the validity of conventional measures of occupational status, on the sex composition of occupations, and on the effects of occupation on earnings. This paper proposes a theory of vertical occupational differentiation based on the role activities of occupational incumbents. Two dimensions of vertical differentiation, authority and complexity, are derived from the division of labor. These concepts are shown to differ from occupational prestige by estimating confirmatory factor models that contain indicators of authority, complexity, and prestige. Results of the analysis are used to suggest resolutions for the anomalies cited.

Research on the socioeconomic achievement process has begun to generate anomalous findings, many of which involve problems with occupational status as it is conventionally measured. Such anomalies include findings on the validity of conventional measures of occupational status, on the sex composition of occupations, and on the effects of occupation on earnings.

Analyses of the validity of conventional measures of occupational status or prestige show that a regression-based estimate of prestige such as the Duncan (1961) SEI is more valid than direct popular ratings of prestige; that is, the SEI corresponds more closely to an unmeasured occupational socioeconomic status variable than do direct ratings of prestige

(Featherman and Hauser, 1976a; Featherman et al., 1975; Spaeth, 1978). These findings support the "curious implication" that "empirical results . . . are easier to rationalize on the assumption that occupational socioeconomic status is the 'true' measure of occupational status and prestige is a fallible indicator thereof" (Duncan et al., 1972:48-9). The implication is curious because the SEI is constructed by regressing prestige on occupation-specific levels of income and education. In that equation, the predictors are more valid than the criterion.¹

In analyses of earnings, the SEI has been interpreted as an indicator of role performances (Sewell and Hauser, 1975). Moreover,

people perceive . . . accurately that professional and administrative occupations, by their very definition or organization, call for the exercise of greater authority and control and apparently require for their exercise, native and trained capacities and personality traits which craft or operative occupations,

* Direct all communications to: Joe L. Spaeth; Survey Research Laboratory; 1005 W. Nevada St.; University of Illinois; Urbana, IL 61801.

This article is a revision of a paper presented at the annual meeting of the American Sociological Association, San Francisco, 1978. This work was supported in part by a grant from the Research Board of the University of Illinois at Urbana-Champaign and by Grant NIE-G-76-0077 from the National Institute of Education, Department of Health, Education, and Welfare. The opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education, and no official endorsement by the National Institute of Education should be inferred.

I thank William H. Form, Joan Huber, Kenneth C. Land, and an anonymous referee for criticisms of earlier drafts.

¹ Although Duncan (1961) notes several ad hoc attempts to use prestige ratings as criteria for stratifying occupations, he is quite clear in treating the SEI as a measure of occupational SES and in relating his construction of the SEI to other combinations of occupational levels of education and income and to Edwards's (1938; 1943) construction of a set of occupational categories that could be applied to all censuses starting with that of 1870. In order to validate his social-economic grouping of occupations, Edwards (1943) analyzed the relation of those groupings to education and income.

by their organization, do not. (Featherman et al., 1975:333)

The suggestion that measures of occupational status tap such dimensions of role performance as authority offers a cogent interpretation of their effects, but it does not demonstrate that authority or "other capacities" are measured adequately by conventional measures of status. This suggestion, however, does raise the following questions: Of what dimensions are occupational levels of education and income indicators? What is the relationship of these dimensions to prestige? Can occupations usefully be differentiated according to dimensions other than prestige?

Some evidence for the potential utility of other dimensions of occupational differentiation comes from research on the relationship of sex to occupation. The substantial sex segregation among occupations is well-known (Oppenheimer, 1975; Treiman and Terrell, 1975b), as is the large difference in earnings between men and women (Suter and Miller, 1973; Treiman and Terrell, 1975a). Yet, males and females differ only slightly in levels of occupational status as measured by prestige ratings or by the SEI (Featherman and Hauser, 1976b; Suter and Miller, 1973; Treiman and Terrell, 1975a). On the other hand, Wolf and Fligstein (1979) have shown that men have greater occupational authority than women.

Although monetary returns to occupational prestige are greater for men than for women (Suter and Miller, 1973; Treiman and Terrell, 1975a), occupational prestige accounts for only a small part of the wage gap between men and women—\$124 according to Suter and Miller (1973). A separate measure of occupational authority, on the other hand, helps to account for a substantial part of the sex gap in earnings (Roos, 1978), thereby implying that authority and status are sufficiently distinct dimensions that a serious effort should be made to measure the former independently of the latter.

Other research on the determination of earnings also demonstrates the inadequacy of conventional measures of occupational status. A crude measure of "class" that distinguishes between owners, managers, and workers explains vari-

ance in earnings not explained by occupational status (Wright and Perrone, 1977). The conception of class used in the research cited rests on a highly artificial distinction between the "technical" and the "social" division of labor. The first refers to control over the operation of machines and is held to be occupational. The second refers to control over other workers and is held to be "class." A more parsimonious view holds simply that occupations are the clusters of activities that persons carry out to earn their livelihoods. Supervision of others is just as much an occupational activity as the design, construction, or maintenance of machinery.

The concept of authority underlies this more parsimonious view of class. By controlling the work of others and at the same time not being subject to supervision, owners have great authority. Managers have less authority because they are supervised, and workers have none (Robinson and Kelley, 1979). Reconceptualizing class as authority also establishes linkages between the research just cited and investigations of sex differences between occupations.

These results indicate that conventional measures of occupational status are inadequate and must be reconceptualized. Dimensions of occupation other than status or prestige should be measured in order to capture more fully the effects of occupation on such variables as earnings and to establish the relationship of prestige to other dimensions of occupational differentiation.

This paper proposes a theory of vertical occupational differentiation based on the role activities of occupational incumbents. Two dimensions of vertical differentiation, authority and complexity, are derived from the division of labor, and these are shown to differ from occupational prestige by the estimation of models containing indicators of each dimension.

THE DIVISION OF LABOR AND OCCUPATIONAL DIFFERENTIATION

Dimensions of Occupational Differentiation

The social process that creates differences among occupations according to

role performances is the division of labor. By proliferating tasks, the division of labor creates occupations that vary in their complexity. Task proliferation also creates differences in occupational authority because diverse performances must be coordinated, and coordination implies authority.

As the division of labor becomes more elaborate, occupations become increasingly specialized. On the one hand, the range of tasks allocated to certain occupations becomes narrower until workers spend their time repetitively carrying out simple operations that are small components of larger processes. Cases in point are the manufacture of pins and a modern assembly line (Smith, 1789; Stinchcombe, 1974). On the other hand, other occupations develop through the narrowing of areas of expertise rather than through the narrowing of tasks. Incumbents of these occupations are specialists who do a variety of tasks, all of which are directed to a narrow substantive area, such as a technical or professional specialty. Such "specialists can perform tasks that would not be possible without the expertise available in a narrower field" (Blau, 1977:189). Specialization therefore increases the variation in occupational complexity, from routine jobs consisting of a few simple, repetitive motions to professional and scientific occupations characterized by highly complex work applied to a narrowly defined field.

Occupational authority is created in part by the existence of specialization. The smaller the segments of a process done by individual workers, the greater the need for coordinating them. In modern industrial societies, such coordination is carried out in large-scale formal organizations. These organizations are, of course, hierarchical authority structures, in which positions range from those at the bottom with no authority to those at the top with great authority.

Administrative authority, i.e., authority based on organizational position, is one form of power. Since administrative authority takes place in formal organizations, which are systems of hierarchical offices, it is clearly a specifically occupational form of authority and therefore of

power. To what extent are other forms of power tied to occupations in modern societies?

Blau's (1977) analysis of the distribution of power in modern societies argues that two particularly important forms of power are administrative authority and economic control. The argument rests on Weber's (1968:943) distinction between two forms of domination: "domination by virtue of a constellation of interests" and "domination by virtue of authority" (cited in Blau, 1977:221).

In modern societies, authority is located in bureaucratic positions. Dominance by controlling others through their interests stems from control over economic resources and therefore corresponds to economic control. "Positions of authority over employees are the source of most authority in contemporary societies," and "top positions in organizations with large financial resources are the basis of much control over economic resources in contemporary societies" (Blau, 1977:230, italics omitted). Since positions in bureaucratic organizations are occupations, both administrative authority and economic control are carried out through occupational role performances.

Administrative authority may be operationalized as the number of employees "under the jurisdiction of a given position in a work organization" (Blau, 1977:225). This criterion is a function of the number of organizational levels below a specific position and is therefore a measure of control over the work of others. Another important aspect of organizational authority is the extent to which incumbents of positions may act independently. Thus, the existence of levels above a position implies that the incumbent's discretion is limited.

Economic control may be operationalized as the amount of money or other resources controlled by a person or position—a person's liquid assets or the amount of organizational resources controlled by a position (Blau, 1977:226). Since such control tends to be located in the upper levels of organizations, the absence of levels of authority above a position also may be an indicator of economic control.

Thus, two dimensions of occupational role differentiation—authority and complexity—can be derived from the division of labor. Both dimensions are based on occupational role performances, and both tap vertical aspects of occupational differentiation. If authority, complexity, and, of course, prestige are all vertical dimensions of differentiation, they must be highly related because if correlations between two of them approached zero, it would indicate that these dimensions were orthogonal.² In that case, one of the two would not be vertical.

Relationships between Dimensions

Reasons for expecting authority and complexity to be related pertain to role performances. The relationships of prestige to the other dimensions follow from the nature of popular ratings of prestige and the qualifications of the general public as raters of occupational characteristics.

Occupations with a great deal of authority tend to involve complex tasks. Consider Blau's operational definition of administrative authority as number of employees controlled. The higher the organizational level of a position, the greater the number of persons who will be affected by the decisions taken by its incumbent. Decisions involving large numbers of people tend to be more complex than those involving small numbers because their ramifications are greater. Decisions taken at high levels in organizations such as corporations or government agencies will affect not only many people in the organization but also many outside the organization. Even at lower organizational levels, management involves control over and decision making about highly complex processes. Stinchcombe (1974) shows that keeping a steel-producing plant in operation is a highly complex task. The classic view of

organizations as decision-making structures (March and Simon, 1958; Simon, 1957) implies that positions of authority in organizations entail considerable complexity.

Complex occupations also tend to have relatively great authority. Many complex occupations involve the possession of skills and knowledge not available to persons outside the occupation. This monopoly of skills and knowledge receives legal sanction in the case of the licensing of certain professions. Other occupations restrict access by controlling recruitment. Control of information confers power, and to the extent that this control is legitimated, such power is a form of authority. In addition, certain organizational positions entail control over the knowledge that others need to carry out their work; control over such a resource is a form of power.

Thus, administrative authority and economic control have cognitive components that tend to make such occupations complex; and complex occupations, such as professions, tend to carry considerable authority. Nevertheless, one would expect the relationship between authority and complexity to be imperfect because administrative occupations should rank higher on authority than the professions, and many professions should rank higher on complexity than administration does.

Whereas the relationship between authority and complexity can be derived from role performances, the relationships between authority and prestige and between complexity and prestige cannot. In an attempt to clarify the influence that occupational rewards and perceived value to society have on prestige ratings, Hope (1979) shows that "standard of living" and "value to society" make separate and roughly equal contributions to popular ratings. The same analysis indicates that two dimensions even more central to prestige ratings are "qualifications" and "power and influence" and that prestige lies near the centroid describing this measurement space.

The components of the SEI correspond, at least crudely, to some of these dimensions. Thus, education is a qualification for occupational incumbency, and income

² If the relationship between two variables were curvilinear, their correlation could be zero, but they would not be orthogonal. Monotonic but curvilinear relationships should yield nonzero linear correlations, but other forms of curvilinearity would be evidence that one or both dimensions were not vertical.

is an aspect of standard of living. If the complexity of an occupation is viewed as an indicator of the level of competence needed to perform its duties, complexity can be considered an occupational qualification. Of course, authority is an important aspect of power and influence. Thus, the criteria used by raters of occupational prestige roughly correspond not only to prestige but also to the components of the SEI, as well as to authority and complexity.

Nevertheless, the actual characteristics of occupations should be more accurate indicators of occupational differentiation than popular ratings because they are not filtered through the perceptions of the general public. Although people apparently know enough about occupations to rate various dimensions with a fair degree of consensus (Hodge et al., 1964; Hope, 1979; Treiman, 1977), they do not know enough to rate specific aspects accurately (Evers, 1972; Hodge and Hodge, 1964). Popular ratings of occupational prestige are related to dimensions of role performance, but popular ignorance of specific performances means that the relationships will not be perfect.

The theory proposed here maintains that occupations are differentiated along at least three vertical dimensions that must be highly related if they are truly vertical. Data exist with which to operationalize this theory by estimating models of occupational differentiation.

METHOD

The Data

The data set used here is based on the 323 occupational titles in the 1960 U.S. Census. These data include indicators of complexity and authority from Temme (1975), of authority from four National Opinion Research Center General Social Surveys (GSS), and of prestige based on the NORC studies reported in Siegel (1971).³ The model to be estimated includes indicators of complexity, authority, and prestige.

The source for the indicators of occu-

pational complexity is the *Dictionary of Occupational Titles* (DOT) (U.S. Department of Labor, 1965). From the set of occupational characteristics described in the DOT, three variables have been chosen to reflect occupational complexity: the rated complexity of work with data (DATA), general educational development (GED), and specific vocational preparation (SVP). Rated complexity of work with things (THINGS) is dropped from this analysis for reasons to be discussed later. Rated complexity of work with people (PEOPLE) is treated as an indicator of authority.

DATA varies on an eight-point scale ranging from irrelevant to analyzing ("examining and evaluating data"), coordinating ("determining time, place and sequence of operations or action"), and synthesizing ("integrating analyses of data," USDL, 1965:649).

GED "embraces those aspects of education . . . which contribute to a worker's (a) reasoning development and ability to follow instructions, and (b) acquisition of 'tool' knowledges such as language and mathematical skills" (USDL, 1965:651). This variable has a six-point scale from low ("apply common sense understanding to carry out simple one- or two-step instructions") to high ("apply principles of logical or scientific thinking to a wide range of . . . problems," USDL, 1965:652).

SVP is the amount of time required to learn the "average performance in a job-worker situation." It ranges from one ("a short demonstration only") to nine ("over 10 years," USDL, 1965:652). The intervals of the scale are small at the low end and become greater at the high end. Thus the scale approximates a logarithmic one.

In the DOT, the THINGS scale does not pertain to the full range of occupations. The most complex level of work with things is setting up a machine, which is a highly skilled blue-collar occupation. The three DOT complexity scales have been rescored so that a zero on each indicates that a dimension is irrelevant to performance in a given occupation. If DATA or PEOPLE is irrelevant, the occupation can hardly be very complex, but THINGS is irrelevant to a number of oc-

³ I thank Ross M. Stolzenberg for making these data available.

cupations (Kohn and Schooler, 1978), many of which are white-collar. It would be highly inappropriate to exclude white-collar occupations from an analysis of occupational stratification, so THINGS has been omitted from this analysis.

Although PEOPLE has been treated as an indicator of complexity in other research, it is treated here as an indicator of authority. The scale ranges from a low value for irrelevant to a middle value, supervising, to a high value, mentoring; the last refers to dealing with individuals as whole persons. This corresponds to the kind of authority granted to professionals by their clients.

Two other indicators of authority were computed from the NORC General Social Survey for the years 1972, 1973, 1974, and 1976. In those years, the GSS included questions asking whether the respondent or spouse supervised anyone, and if so, whether their supervisee(s) supervised anyone. These responses were combined into a three-point scale (zero to two) ranging from no supervisory duties to supervision of two or more levels. This variable (MSUP) represents the mean number of supervisory levels below incumbents of each occupation. It is thus an indicator, albeit a crude one, of the organizational location of an occupation.

Respondents also were asked a pair of questions to determine the number of levels above theirs (or their spouse's). Analysis revealed that a simple dichotomy between one or more levels vs. none correlated more highly with other variables than did a three-point scale. This dichotomy is scored one if *no* levels exist above ego's occupation and zero if such levels exist. As a measure of occupational authority, it is therefore the proportion of persons in an occupation who have no one above them. It thus indicates the probability that members of an occupation are independent of a higher authority and is called PIND. If economic control is exercised by top levels in organizations, PIND may be a weak indicator of that concept.

Responses to the four GSS surveys were merged, and scores on MSUP and PIND were calculated for each of the 1960 census three-digit occupational

categories. For comparability with the components of the Duncan SEI, these two variables reflect characteristics of males. They refer to a male's own occupation if he was a respondent or to a husband's occupation if the wife was the respondent and she did not work, so that she reported on her husband's occupation.

Even the merger of four GSSs produced some occupations with very few cases. All categories with five or more cases received the scores computed for that category. All categories with fewer than five cases were combined within major occupation groups according to intermediate classifications (e.g., public administrators were treated as one group by combining local, state, and federal administrators; if necessary, managers, officials, and proprietors were combined across industry). Occupations not falling into intermediate categories were treated as belonging to residual categories with their own scores. The free professions (law, medicine, dentistry, architecture, etc.) were combined into one group on the grounds that persons in these occupations usually supervise at least an office staff.

Indicators of prestige are based on research carried out at NORC. The direct measure of prestige (HSR) is that reported by Siegel (1971) and based on the research of Hodge, Siegel, and Rossi. Siegel also created indicators of the education and income levels of each 1960 census occupation—the proportion of males in each occupation who had 12 or more years of schooling (ED) and the proportion with occupational income of \$5,000 or greater (INC). Thus, these indicators parallel the 1950-based SEI and its components, but they have the advantage of referring to all instead of a subset of the census occupations. In addition, it would have been impossible to use the SEI and its components in this analysis because the multiple correlation between SEI and its components is 1.0 by definition. Means and standard deviations for each indicator are given in the Appendix, along with correlations between the indicators.

The indicators are among the best available, but they are clearly far from ideal. The DOT items are based on the ratings of experts, but no information is available on

the validity or reliability of these ratings. The DOT itself recognizes that the categories of the PEOPLE scale are somewhat indefinite and may not be mutually exclusive (USDL, 1965:649). The authority measures derived from the GSS have several limitations. MSUP encompasses only two levels of subordinates, a degree of differentiation that does little justice to the large formal organizations in which most Americans work. None of the available indicators directly taps economic control, although PIND may tap this concept weakly. HSR, the direct rating of prestige, covers more occupations than any other set of prestige ratings, but some of the occupation names rated by respondents do not closely match 1960 census categories. ED and INC are standard estimators of direct ratings, but they clearly do not tap occupational role performances directly. If analysis based on these indicators supports the theory proposed here, it will show that the theory could fruitfully be pursued using better indicators.

The Models

The main features of an appropriate measurement model already have been mentioned. Three dimensions underlie the nine indicators—complexity: DATA, GED, and SVP; authority: PEOPLE, MSUP, and PIND; and prestige: HSR, ED, and INC. The three dimensions should be highly related; however, each indicator should be directly related only to its specific dimension, although it is, of necessity, indirectly related to the other two dimensions.

The model for the three dimensions is shown in Table 1, in which authority indicators load on authority, complexity indicators on complexity, and prestige indicators on prestige; all other possible loadings are zero. A procedure for estimating this model must allow certain loadings to be constrained to be zero and must allow the covariances between factors (dimensions) to vary freely. The model assumes that the dimensions produce variation in the indicators, so the procedure must provide estimates of the disturbances of the items. Because errors

Table 1. Hypothetical Factor Pattern for Constrained Factor Analysis of Work Characteristics and Prestige Indicators

Indicator	Factor		
	Authority	Complexity	Prestige
MSUP	X	0	0
PEOPLE	X	0	0
PIND	X	0	0
SVP	0	X	0
GED	0	X	0
DATA	0	X	0
HSR	0	0	X
ED	0	0	X
INC	0	0	X

of measurement may be shared by more than one indicator, the disturbances must be allowed to be related to each other. The estimation procedure also should produce standard errors for all coefficients calculated, a test of the overall fit of the model, and diagnostic information for detecting sources of poor fit. Maximum likelihood confirmatory factor analysis, a method of estimation that produces this information, has been developed by Jöreskog (1974) and operationalized in COFAMM, a computer program for confirmatory factor analysis (Sörbom and Jöreskog, 1976).

In order for models of the kind shown in Table 1 to be identified, each factor (dimension) is assigned a reference indicator, which establishes the metric of that factor. The loadings of the reference indicators are constrained to take a value of one. This means that the variance of the reference indicator is one, and all other indicators of a factor are evaluated by comparison with the reference indicator. Even though the loadings of indicators thereby are made comparable, the coefficients are not standardized in the traditional sense—they are rescaled. Other indicators are allowed to vary freely, except that, for each factor, some indicators must be constrained to be zero—a number one less than the number of factors in the model. Coefficients for each factor estimate the extent to which an indicator reflects the factor in comparison with the reference indicator. In Table 1, indicators of other factors are constrained to be zero in order to illustrate the model in its simplest form.

A maximum likelihood χ^2 test compares the variance-covariance matrix estimated from the model with the observed matrix.

The larger the χ^2 , the poorer the fit; a nonsignificant χ^2 shows that a model fits the data well. Two kinds of information are available on sources of poor fit: first-order partial derivatives for each constrained coefficient and a matrix of residuals showing the differences between estimated and observed covariances. The residuals indicate which covariances are estimated badly by the model. If they were to show marked patterning, an additional factor might need to be extracted.

Coefficients are estimated by specifying successively less restrictive models until the variance-covariance matrix estimated by a model does not differ significantly from the observed matrix. First, the "pure" model with hypothesized loadings only (see Table 1) is estimated. Then, some of the coefficients that initially were constrained to be zero are allowed to be free. Which coefficients are freed is determined by the values of the partial derivatives. In general, factor loadings are freed first, followed by the correlations between residuals; but the final stage of model fitting alternates between freeing loadings and residual correlations. When an acceptable fit is obtained, coefficients are compared with their standard errors, and insignificant ones are omitted.

Two models are estimated here. The first pertains to relationships among role performances only and therefore contains indicators of authority and complexity but not prestige. The second contains indicators of all three dimensions.

RESULTS

The first model to be estimated deals with the indicators of role performances. As Table 2 shows, MSUP, PEOPLE, and PIND load strongly on authority; GED, SVP, and DATA load strongly on complexity. These findings are in accord with the authority and complexity parts of the model shown in Table 1. Although DATA and SVP have small but significant loadings on authority (.154 and -.149, respectively), their loadings on complexity are much larger (.780 and 1.0). Similarly, the modest negative loading of MSUP on complexity (-.210) is much smaller than

Table 2. Constrained Factor Analysis of Indicators of Occupational Authority and Complexity

Indicator	Factor	
	Authority	Complexity
MSUP	1.0	-.210
PEOPLE	.610	0
PIND	.420	0
SVP	-.149	1.0
GED	0	.971
DATA	.154	.780
$\chi^2 = 4.787$, d.f. = 5, $p = .442$		

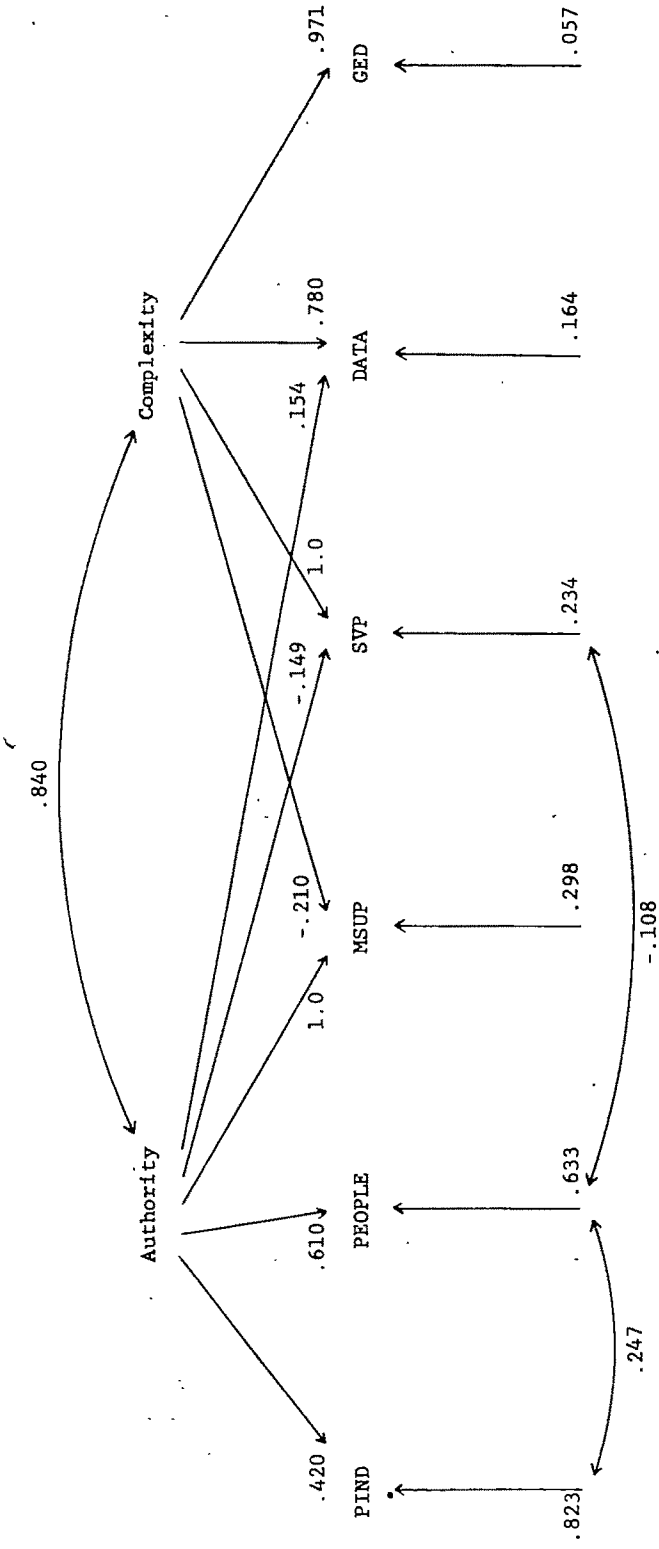
its loading on authority, a factor for which it is the reference indicator. Although the factors are basically distinctive in item composition, the correlation between the two is .840 (see Figure 1).

The model that produced the results in Table 2 allows for the presence of correlations between disturbances. Only two of these are statistically significant: PEOPLE-SVP (-.108) and PEOPLE-PIND (.247). The fit of the model is excellent, as shown by a χ^2 of 4.787 with five degrees of freedom.

Adding the indicators of prestige to those of complexity and authority produces estimates that continue to suggest that the dimensions of occupational differentiation are distinctive (see Table 3). The pattern of loadings for authority and complexity is quite similar to that in Table 2. MSUP is the reference indicator for authority, with PEOPLE and PIND having loadings similar to those in the two-factor solution (.609 and .413, respectively). SVP has a small negative (-.135) and DATA a small positive (.160) loading on authority. The pattern of loadings for complexity is also quite similar to

Table 3. Constrained Factor Analysis of Work Characteristics and Prestige Indicators

Indicator	Factor		
	Authority	Complexity	Prestige
MSUP	1.0	-.177	0
PEOPLE	.609	0	0
PIND	.413	0	0
SVP	-.135	1.0	0
GED	0	.993	0
DATA	.160	.786	0
HSR	0	0	1.0
ED	0	.201	.747
INC	.125	0	.691
$\chi^2 = 18.088$, d.f. = 15, $p = .258$			



$\chi^2 = 4.787, d.f. = 5, p = .442$

Figure 1. Model of Vertical Role Differentiation among Occupations

that in Table 2. SVP is the reference indicator, with GED having a loading nearly as large (.993) and DATA a substantial loading (.786). As with the two-factor solution, MSUP has a modest negative loading on authority (-.177).

The third factor clearly measures prestige. HSR is the reference indicator, with ED having a substantial loading (.747) and INC a slightly smaller one (.691). In addition, ED has a modest loading on complexity (.201) and INC a small (and not significant) loading on authority (.125). The loading of INC on authority was allowed to remain in the model because, together with the loading of ED on complexity, it tends to explain why the Duncan SEI seems consistently more valid than ratings of prestige. The components of the SEI apparently tap dimensions of occupational differentiation other than prestige. The fit of the model is very good, with a χ^2 of 18.088 and 15 degrees of freedom.

The three factors are highly but not perfectly correlated: authority-complexity = .813, authority-prestige = .779, complexity-prestige = .739. With standard errors of .032, .032, and .028, respectively, the difference between each of these correlations and 1.0 is highly significant statistically. The three factors are not "congeneric"; that is, they are not equivalent measurements of the same thing (Jöreskog, 1974:5).

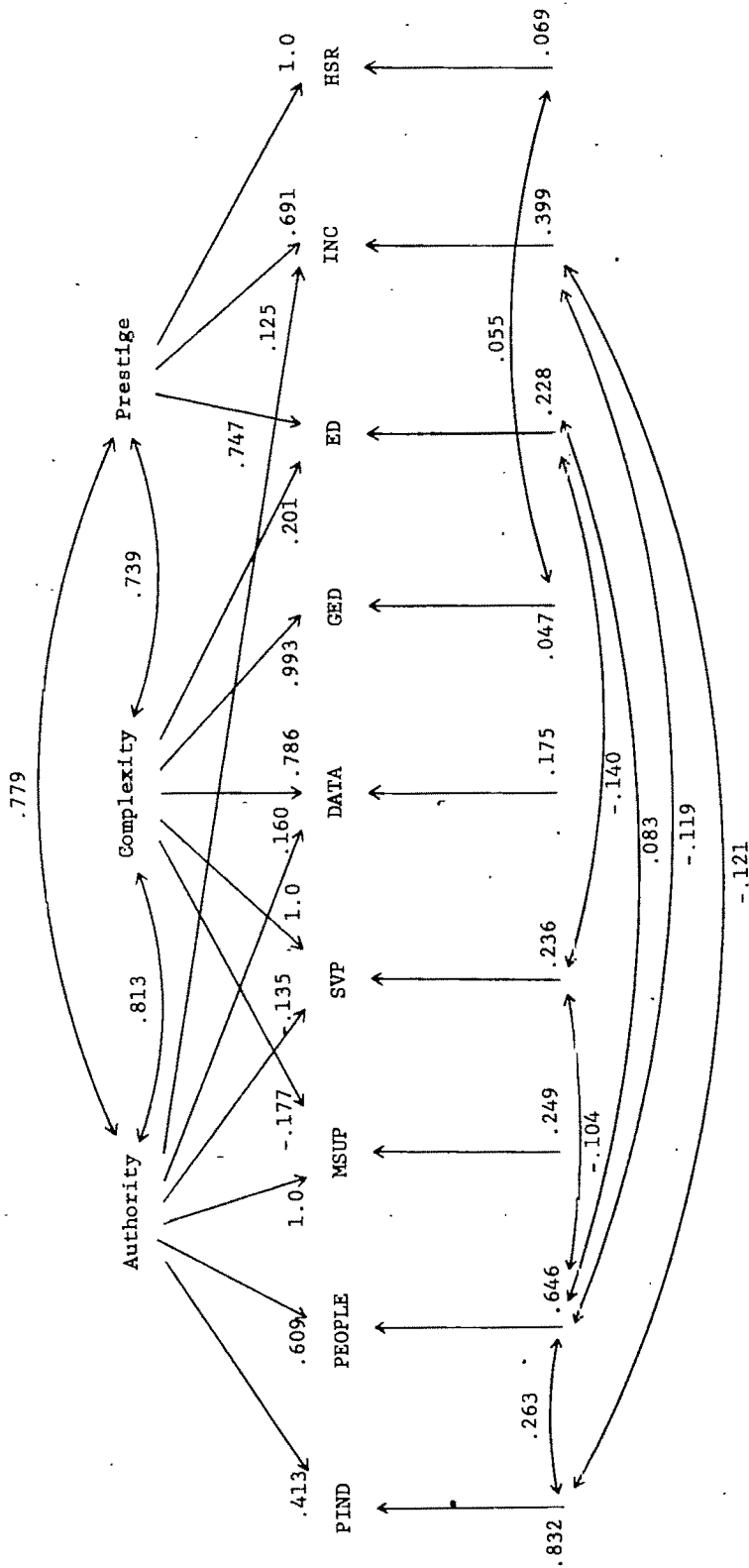
Of the seven significant correlations between residuals, only one is sizable, that between PEOPLE and PIND (.263). Since the two items are indicators of the same dimension, authority, there is no evidence of the need for another factor in these data. All other significant correlations among residuals approximate .1.

The size of the residuals themselves casts some light on the unreliability of MSUP and PIND, the two items constructed from the GSS for this analysis. The reliability of these indicators is at issue because the minimum number of cases required for an occupation to form a separate category of its own was five. Because of their aggregation, these data on occupations should be more reliable than the same data on individuals (Robinson and Kelley, 1979; Roos, 1979), but five

cases is not a large number. The residuals themselves (Figure 2) have two components, unreliability and specificity, which are not separable in this analysis. Considered as estimates of unreliability, therefore, the residuals are maxima. The maximum unreliability for MSUP is therefore .249, which compares favorably with the .236 for SVP, the .228 for ED, and the .399 for INC. Given that ED and INC are census-based estimates, the reliability of MSUP seems to be reasonably high.

Taken as an indicator of unreliability, the .832 for PIND is quite high. However, the actual survey questions on which MSUP and PIND are based imply that the reliability of the two indicators should be approximately the same. For MSUP, respondents reported on the existence of at least one subordinate and whether that person had at least one subordinate of his or her own. For PIND, respondents simply reported on the existence of a supervisor. There seem to be no grounds for assuming that respondents' accuracy would be drastically less for reporting supervisors than subordinates. It seems more reasonable to assign the differences between these coefficients to specificity. Given the size of the residuals for PEOPLE (.646) and INC (.399), other indicators also may have large specific components.

The results reported so far yield little information on why certain indicators have substantial specificities. An analysis that included the percentage of males in each occupation provides several useful clues to specificity. Most of the results of this analysis will not be reported in detail because they confirm those already presented. Salient differences in loadings between the three-factor model already presented and one in which the percentage male initially is allowed to load on all three factors are limited to the following: the percentage male has a small (.113) and marginally significant (standard error = .052) loading on complexity; it has no significant loadings on the other two factors. ED does not have a significant loading on complexity, nor does INC have a significant loading on authority. Otherwise, the pattern of loadings in the model with per-



$\chi^2 = 18.088$, d.f. = 15, $p = .258$

Figure 2. Model of Vertical Differentiation among Occupations Incorporating Prestige

centage male is closely similar to those in the model without this variable. Furthermore, the correlations between factors are virtually the same. The fit of the model is given by a χ^2 of 23.536 with 19 degrees of freedom; $p = .215$.

Correlations between the residuals of percentage male and the other variables provide information on the specificity of some of these variables. Table 4 shows zero-order correlations and correlations of residuals with percentage male. The zero-order correlations show rather clearly why percentage male loads only on complexity. Of the three sets of three indicators, those for complexity are the only ones to have consistently positive correlations with percentage male. Among indicators of authority, PEOPLE is negatively correlated with percentage male, as is ED among the indicators of prestige. For the most part, correlations of the residuals reflect the zero-order correlations, but the significant correlations are particularly instructive. There are four such correlations—percentage male with PEOPLE, SVP, ED, and INC. The last three of these clearly indicate that the specificity of a variable resides at least partly in its manifest content, as opposed to the dimension of which it is an indicator. Thus, SVP is the amount of time required to learn a job; it is positively related to percentage male. Because women's labor force participation is more sporadic than men's, the latter are exposed to a greater "risk" of being in the labor force long enough to accrue the experience necessary to qualify for occupations that re-

quire long periods of special vocational preparation. ED, on the other hand, reflects the higher levels of education attained by women, at least through 1960. Recall that ED is the percentage of persons in an occupation who had completed 12 years of schooling. Women's greater average levels of education were manifested by their greater probability of graduating from high school (Folger and Nam, 1967). The sizable coefficient for INC (.288) reflects one of the problems on which this analysis attempts to throw some light. Men are concentrated in occupations that pay better than the ones in which women are concentrated.⁴

The negative correlation between the residuals of percentage male and PEOPLE presumably stems from a confounding in the DOT between two aspects of occupations dealing with people. In the first place, of course, a crucial aspect of on-the-job social interaction is the giving and taking of orders. In the second place, women are concentrated in occupations that involve interacting with others as part of the duties. Part of the PEOPLE scale taps the first aspect and brings about its substantial loading on authority. Another part taps the second aspect and is reflected in the negative correlation with percentage male. In both the analysis that includes percentage male and that in which this variable is absent, the correlations of the residuals of PEOPLE with PIND is .26. Apparently the variables tap an authority-related concept other than the general level of authority characteristic of occupations.

In general, the intercorrelations of the residuals of percentage male with those of the other variables highlight the weakness of some indicators. This weakness probably results in part from the fact that the indicators are used here in ways quite

Table 4. Zero-Order Correlations and Correlations of Residuals of Indicators of Authority, Complexity, and Prestige with Percentage Male

Indicator	Correlations	
	Zero-Order	Residuals
MSUP	.123	ns
PEOPLE	-.107	-.185
PIND	.056	ns
SVP	.280	.135
GED	.145	ns
DATA	.138	ns
HSR	.126	ns
ED	-.056	-.151
INC	.388	.288

⁴ Whatever the virtues and drawbacks of using aggregate levels of education and income to estimate prestige, as in the SEI, and then using prestige in individual-level models as an effect of education and a cause of earnings, the "finding" that men tend to be concentrated in high-paying occupations raises the following problem: What are the characteristics of men's occupations that make them pay well? Using the income composition of these occupations as an explanation would clearly be tautological.

different from the purposes for which they were created. An additional source of weakness is the crudity of the indicators themselves. In particular, the indicators of authority clearly fail to do justice to that concept.

DISCUSSION

This paper shows that there are at least three dimensions of the vertical differentiation of occupations: authority, complexity, and prestige. These dimensions are highly related (interfactor correlations are about .8) but compositionally quite distinct. Although these results must be treated as provisional because of the crudity of the indicators and specific components of some of them, the results point to the advantages of a disaggregated approach to occupational SES.⁵ Among the issues raised by this perspective are the interpretation of prestige, the analytical utility of authority and complexity, and further development of measures of these dimensions.

Prestige is not the same thing as authority or complexity; it is a distinct dimension of occupational differentiation. Furthermore, the components of the SEI are direct indicators of prestige but not, for the most part, of the other two dimensions. Given the results of this analysis, occupational prestige should be treated as an indicator of the perceptions of the general public, and the SEI should be treated as an indicator of prestige. If such characteristics of occupations as authority and complexity are important variables in an analysis, these characteristics should be measured directly.

Some ways in which direct measures of job characteristics may be preferable to prestige ratings already have been mentioned. Measures of authority reflect the sex segregation of occupations far more closely than does prestige. Thus, in the Wisconsin data on high school graduates, 28% of the men and 9% of the women have the authority to hire and fire; 37% of the men influence the pay of others, compared with 14% of the women; and 61% of

the men supervise others, compared with 38% of the women (Wolf and Fligstein, 1979).

With a typology based on the two GSS indicators of authority used here, Roos (1979) has accounted for 58% of the sex gap in earnings, with most of the difference due to authority and other occupational characteristics and none due to prestige.⁶ Even these results may underestimate the effects of authority. An analysis of the earnings gap in a single firm found that discrimination in earnings between the sexes was completely explained by level of job responsibility (Malkiel and Malkiel, 1973).⁷

In addition to confirming the importance of authority as a determinant of earnings, Roos's (1979) results also support the interpretation of the SEI as a measure of prestige. In separate sets of equations, the effects of the SEI and HSR on earnings were undistinguishable and became nonsignificant when other occupational characteristics entered the analysis.

Complexity is important for other reasons. It is a dimension of the intergenerational transmission of status characteristics (Spencer, 1977) that explains the effects of parental SES on intelligence and part of the effects of parental SES on education (Spaeth, 1976b). Moreover, the complexity of one's work at one period increases one's intellectual flexibility as well as the complexity of one's work at a later period (Kohn and Schooler, 1978). Thus, an important intrinsic aspect of work is self-reinforcing.

Another way in which the effects of authority and complexity may be self-reinforcing lends itself to a human capital

⁵ Compare the arguments for treating the traditional components of SES in a disaggregated manner (Duncan et al., 1972; Hauser, 1972).

⁶ Unfortunately, the median earnings of males was one of the occupational characteristics added. This variable had a substantial impact on the earnings of both men and women, whether the SEI or HSR was controlled. It is possible that this independent variable is confounded with the dependent variable but also that the effects of authority on earnings and on the earnings gap are underestimated. On the other hand, the decomposition of the earnings gap attributable to occupational characteristics other than prestige is not necessarily attributable to authority.

⁷ The measure of responsibility was a firm-specific one that was highly correlated with pay. Part of this correlation could easily have been an artifact of company policy.

interpretation. The importance of occupational experience in the determination of earnings is a fundamental tenet of human capital theory (Becker, 1975; Mincer, 1974), and occupationally relevant experience has been shown to be more important than total experience as a determinant of earnings (Griffin, 1978; Spaeth, 1976a). Experience is important because it is an indicator of on-the-job training, which is an investment that produces earnings returns.

One may hypothesize that the "quality" of work experience should be an especially important determinant of earnings and that experience perceived to be relevant should be particularly important if it is in occupations with high earnings potentials. Such occupations should be high on authority, complexity, or both. Experience with authority and complexity produces increments in the ability to handle authority and complexity. From the worker's point of view, demonstrated competence on either dimension is evidence that he or she should be promoted to a higher level. From the employer's point of view, demonstrated competence on either dimension is evidence that the worker is ready for promotion. This hypothesis could be tested by constructing a measure of quality of experience using a career history to ascertain the amount of time spent on each job, by weighting time spent on the job according to the complexity of the work and the amount of authority entailed in each job, and by summing the weighted scores over the career. This variable should explain earnings better than a combination of temporal experience and the perception of relevance. Interpreting authority and complexity as indicators of quality of experience suggests a reasonably straightforward human capital interpretation of the importance of these dimensions. Unless prestige is considered a surrogate for one of these dimensions, it is difficult to formulate a similar explanation for its effects.⁸

Although currently available indicators of authority have greatly enhanced our

understanding of the effects of occupations, these indicators are extremely crude. The growing literature on the effects of authority and the present results on the importance of authority as a dimension of occupational differentiation make the development of better indicators of authority a logical next step.⁹ The following brief discussion proposes an approach to the development of such measures. For these purposes, authority is viewed as legitimate control over work situations, including control over the work of others, control over one's own work, and control over occupation-linked resources.¹⁰ The first form of control corresponds to administrative authority and the second to autonomy. The third corresponds to Weber's (1968) economic control.

A starting point for the measurement of administrative authority is Blau's (1977) operationalization of this concept. Needed here would be information on the total number of levels below an occupational incumbent and the number of employees whom he or she controls. Such control would have to be defined in broader terms than supervision because greatest power is exercised indirectly through intermediaries (Blau, 1977:218). Also included in this concept would be designing work procedures plus promulgating and enforcing work rules. Further indicators of administrative authority could be participation in decisions about hiring and firing and about pay (Wolf and Fligstein, 1979), as well as other aspects of the design and application of systems of evaluation (Dornbusch and Scott, 1975).

⁹ This discussion is not intended to denigrate the importance of complexity. Available indicators of complexity are based on expert observations. Measures of authority (except for PEOPLE) are based on survey respondents' reports on their own work. Although persons can presumably report such factual matters as the presence or absence of supervisors with some accuracy, their perceptions of the difficulty of their work might be highly subjective. Since complexity is essentially the cognitive difficulty of the work, one would expect ratings of such work aspects to be inaccurate. This discussion therefore concentrates on the derivation of indicators of authority.

¹⁰ Wolf and Fligstein (1979) propose a similar scheme that distinguishes between control over the work of others and oneself plus capital. Since organizational resources are not limited to the monetary and since some monetary resources are not capital, the distinction proposed here is somewhat broader.

⁸ See Sawyer (1978) for an attempt to provide a human capital interpretation of prestige that treats prestige as a surrogate for complexity and autonomy.

Indicators of autonomy could include the presence or absence of supervisors as well as the closeness of supervision for persons with supervisors. The application of evaluation procedures also could be important. Occupational incumbents evaluated on the results of their work should have more autonomy than those evaluated according to conformity to established procedures (Dornbusch and Scott, 1975).

Control over resources would include control over capital, such as making investment decisions for a firm. Other indicators could be the size of a department's budget (as a characteristic of heads of departments) and the amount of money that an occupational incumbent could disburse without the approval of higher authority.

Another particularly important resource is information. Persons at communications "nodes" in organizations can have considerable power, and if the transmission of information is one of the duties of a job, the power is legitimate. Occupying a "boundary spanning" role (Thompson, 1961) may be a particularly important instance of the control of information. Such roles, which involve negotiating with other organizations and keeping members of one's own organization informed of the results, may have considerable authority (Aiken and Hage, 1968; Goldner, 1970). It also should be noted that the boundaries between departments may be spanned within an organization. Incumbents of occupations whose duties include such activities also should have considerable authority.

This preliminary attempt to derive indicators of authority is analogous to that adopted elsewhere in this paper. In order to understand the vertical differentiation of occupations, and therefore the nature and effects of occupations, one must postulate a set of dimensions and attempt to operationalize them. This approach can also be applied to the derivation of sub-dimensions, such as those proposed for authority.

Methodologically, the proposed procedures correspond to hierarchical factor analysis,¹¹ an approach that also applies to the relationships between authority, complexity, and prestige. The high correlations among these variables argue that they may be considered as dimensions reflecting a single grand factor—occupational SES. In suggesting this perspective, an anonymous referee has aptly described such a concept as a "black box" that accounts for the three dimensions. This critic also suggests that, given the general concept, the dimensions themselves are no longer necessary. The reverse is probably closer to the truth. Without conceptions of distinct dimensions, the black box will remain opaque and its contents unknown. It is through attempts to operationalize dimensions of vertical occupational differentiation—occupational SES—that the meaning of this concept can be empirically explicated. This paper has made a start in this direction, but much remains to be done.

¹¹ For a general discussion of hierarchical factor analysis, see Nunnally (1978). For an application to measured intelligence, see Cattell (1971).

APPENDIX

CORRELATIONS, MEANS, AND STANDARD DEVIATIONS USED IN ANALYSIS OF OCCUPATIONAL DIFFERENTIATION

Variable	Correlations								
	MSUP	PEOPLE	PIND	SVP	GED	DATA	HSR	ED	INC
MSUP	1.000								
PEOPLE	.506	1.000							
PIND	.360	.491	1.000						
SVP	.508	.333	.321	1.000					
GED	.613	.514	.348	.845	1.000				
DATA	.629	.485	.314	.789	.884	1.000			
HSR	.630	.441	.278	.591	.741	.663	1.000		
ED	.585	.492	.225	.487	.717	.668	.841	1.000	
INC	.551	.247	.116	.514	.564	.539	.737	.672	1.000
Means	.530	1.323	.175	5.522	3.676	3.285	39.212	.497	.492
SDS	.330	1.856	.172	1.722	1.022	2.317	14.498	.274	.247

REFERENCES

- Aiken, Michael and Jerald Hage
1968 "Organizational interdependence and intra-organizational structure." *American Sociological Review* 33:912-31.
- Becker, Gary S.
1975 *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. 2nd ed. New York: National Bureau of Economic Research.
- Blau, Peter M.
1977 *Inequality and Heterogeneity*. New York: Free Press.
- Cattell, Raymond B.
1971 *Abilities: Their Structure, Growth, and Action*. Boston: Houghton Mifflin.
- Dornbusch, Sanford M. and W. Richard Scott
1975 *Evaluation and the Exercise of Authority*. San Francisco: Jossey-Bass.
- Duncan, Otis Dudley
1961 "A socioeconomic index for all occupations." Pp. 109-38 in Albert J. Reiss, Jr. (ed.), *Occupations and Social Status*. New York: Free Press.
- Duncan, Otis Dudley, David L. Featherman, and Beverly Duncan
1972 *Socioeconomic Background and Achievement*. New York: Seminar Press.
- Edwards, Alba M.
1938 *A Social-Economic Grouping of the Gainful Workers of the United States*. Washington, D.C.: U.S. Government Printing Office.
1943 *Comparative Occupation Statistics for the United States, 1870 to 1940*. Washington, D.C.: U.S. Government Printing Office.
- Evers, Mark
1972 "Occupational experience and occupational knowledge." Paper presented at the annual meeting of the American Sociological Association, New Orleans.
- Featherman, David L. and Robert M. Hauser
1976a "Prestige or socioeconomic scales in the study of occupational achievement?" *Sociological Methods and Research* 4:403-22.
1976b "Sexual inequalities and socioeconomic achievement in the U.S., 1962-1973." *American Sociological Review* 41:462-83.
- Featherman, David L., F. Lancaster Jones, and Robert M. Hauser
1975 "Assumptions of social mobility research in the U.S.: the case of occupational status." *Social Science Research* 4:329-60.
- Folger, John K. and Charles B. Nam
1967 *Education of the American Population*. Washington, D.C.: U.S. Government Printing Office.
- Goldner, Fred H.
1970 "The division of labor: process and power." Pp. 97-143 in Mayer N. Zald (ed.), *Power in Organizations*. Nashville: Vanderbilt University Press.
- Griffin, Larry J.
1978 "On estimating the economic value of schooling and experience: some issues in conceptualization and measurement." *Sociological Methods and Research* 6:309-35.
- Hauser, Robert M.
1972 "Disaggregating a social-psychological model of educational attainment." *Social Science Research* 1:159-88.
- Hodge, Robert W. and Patricia Hodge
1964 "Whatever happened to the nuclear physicist?" Paper presented at the annual meeting of the American Sociological Association, Montreal.
- Hodge, Robert W., Paul M. Siegel, and Peter H. Rossi
1964 "Occupational prestige in the United States, 1925-63." *American Journal of Sociology* 70:286-302.
- Hope, Keith
1979 "What is occupational prestige?" Unpublished paper.
- Jöreskog, Karl G.
1974 "Analyzing psychological data by structural analysis of covariance matrices." Pp. 1-56 in David H. Krantz, Richard C. Atkinson, R. Duncan Luce, and Patrick Suppes (eds.), *Measurement, Psychophysics, and Neural Information Processing*. San Francisco: Freeman.
- Kohn, Melvin L. and Carmi Schooler
1978 "The reciprocal effects of the substantive complexity of work and intellectual flexibility: a longitudinal assessment." *American Journal of Sociology* 84:24-52.
- Malkiel, Burton G. and Judith A. Malkiel
1973 "Male-female pay differentials in professional employment." *American Economic Review* 63:693-705.
- March, James G. and Herbert A. Simon
1958 *Organizations*. New York: Wiley.
- Mincer, Jacob
1974 *Schooling, Experience, and Earnings*. New York: National Bureau of Economic Research.
- Nunnally, Jum C.
1978 *Psychometric Theory*. 2nd ed. New York: McGraw-Hill.
- Oppenheimer, Valerie Kincade
1975 "The sex-labeling of jobs." Pp. 307-25 in Martha T. S. Mednick, Sandra S. Tangri, and Lois W. Hoffman (eds.), *Women and Achievement: Social and Motivational Analysis*. New York: Wiley.
- Robinson, Robert V. and Jonathan Kelley
1979 "Class as conceived by Marx and Dahrendorf: effects on income inequality and politics in the United States and Britain." *American Sociological Review* 44:38-57.
- Roos, Patricia A.
1979 "Sexual stratification in the workplace: male-female differences in economic returns to occupation." Unpublished paper.
- Sawyer, Darwin O.
1978 "Social roles and economic firms: the sociology of human capital." *American Journal of Sociology* 83:1259-70.
- Sewell, William H. and Robert M. Hauser
1975 *Education, Occupation, and Earnings*:

- Achievement in the Early Career. New York: Academic Press.
- Siegel, Paul M.
1971 *Prestige in the American Occupational Structure*. Ph.D. dissertation, Department of Sociology, University of Chicago.
- Simon, Herbert A.
1957 *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*. 2nd ed. New York: Macmillan.
- Smith, Adam
[1789] *The Wealth of Nations*. New York: Modern Library.
1937 Library.
- Sörbom, Dag and Karl G. Jöreskog
1976 *COFAMM: Confirmatory Factor Analysis with Model Modification*. Chicago: National Educational Resources.
- Spaeth, Joe L.
1976a "Characteristics of the work setting and the job as determinants of income." Pp. 161-76 in William H. Sewell, Robert M. Hauser, and David L. Featherman (eds.), *Schooling and Achievement in American Society*. New York: Academic Press.
1976b "Cognitive complexity: a dimension underlying the socioeconomic achievement process." Pp. 103-31 in William H. Sewell, Robert M. Hauser, and David L. Featherman (eds.), *Schooling and Achievement in American Society*. New York: Academic Press.
1978 "Measures of occupational status in a special population." *Social Science Research* 7:48-60.
- Spenner, Kenneth I.
1977 *From Generation to Generation: The Transmission of Occupations*. Ph.D. dissertation, Department of Sociology, University of Wisconsin, Madison.
- Stinchcombe, Arthur L.
1974 *Creating Efficient Industrial Administration*. New York: Academic Press.
- Suter, Larry E. and Herman P. Miller
1973 "Income differences between men and career women." *American Journal of Sociology* 78:962-74.
- Temme, Lloyd V.
1975 *Occupations: Meaning and Measures*. Washington, D.C.: Bureau of Social Science Research.
- Thompson, Victor A.
1961 *Modern Organization*. New York: Knopf.
- Treiman, Donald J.
1977 *Occupational Prestige in Comparative Perspective*. New York: Academic Press.
- Treiman, Donald J. and Kermit Terrell
1975a "Sex and the process of status attainment: a comparison of working women and men." *American Sociological Review* 40:174-200.
1975b "Women, work, and wages—trends in the female occupation structure." Pp. 157-99 in Kenneth C. Land and Seymour Spilerman (eds.), *Social Indicator Models*. New York: Russell Sage.
- U.S. Department of Labor
1965 *Dictionary of Occupational Titles, 1965*. Vol. 2. *Occupational Classification and Industrial Index*. 3rd ed. Washington, D.C.: U.S. Government Printing Office.
- Weber, Max
1968 *Economy and Society: An Outline of Interpretive Sociology*. 3 Vols. Ed. by Guenther Roth and Claus Wittich. New York: Bedminster.
- Wolf, Wendy C. and Neil D. Fligstein
1979 "Sex and authority in the workplace: the causes of sexual inequality." *American Sociological Review* 44:235-52.
- Wright, Erik Olin and Luca Perrone
1977 "Marxist class categories and income inequality." *American Sociological Review* 42:32-55.

PRIEST RESIGNATIONS IN A LAZY MONOPOLY*

JOHN SEIDLER
Ohio State University

American Sociological Review 1979, Vol. 44 (October):763-783

This paper examines the structural antecedents and consequences of diocesan resignation rates among American Catholic priests during the period 1966-1970. A national survey with a 74% return rate (941 priest-informants) yielded usable data on 131 American Catholic dioceses—i.e., 96% of the population as defined. Resignations appeared to derive directly from the following diocesan conditions: percentage of parishes run by religious clergy, regional dominance (i.e., status of dioceses as "province"), percentage Catholic in area population, percentage of diocesan priests engaged full-time in nonparish work, and estimated degree of priest passivity and disillusionment. Indirectly, traditional authority structures, ideological divisions, and the absence of social solidarity also increased the probability of resignations. Resignations appeared to have no immediate feedback effect on episcopal policies. Such findings are in partial accord with other research indicating a deprivation syndrome leading to resignations. But the special salience of facilitating, rather than causative, factors, along with the absence of feedback, strongly suggests that the Catholic church of that era was a lazy monopoly. Such organizations are slow to make essential changes; they allow radical personnel to depart rather than deal with their criticisms.

Priest resignations have been a recent object of scrutiny by sociologists. Several authors, studying resignations in a social psychological framework, have analyzed attitudes preceding resignation (e.g., Schallert and Kelley, 1970; Schoenherr and Greeley, 1974). Such investigations also have had organizational implications. For example, Cyrns (1970) implied that the clergy climate was overly dogmatic. Schallert and Kelley (1970) suggested that the institutional rate of change was too slow for progressive clergy. Schoenherr and Greeley (1974) implied that Vatican absolutism on priestly celibacy resulted in a burdensome structure of clergy life. All of these studies suggest that the structure of ecclesiastical Catholicism constituted a stumbling block to continued commitment of many American clergy, at least for the period of the late 1960s and early 1970s.

Other authors more directly investigated the organizational environment of priestly life and commitment. Hall and Schneider (1973) portrayed a dismal work structure for assistant pastors in one diocese during the same period.¹ Goldner et al. (1977) suggested that the Catholic church's recent open communication system, while aligning Catholicism with contemporary democracy, has had indirect negative consequences. Negatively for the organization, open communications have produced cynical knowledge and lessened commitment among lower clergy and other constituents. According to Goldner et al. (1977:540), cynical knowledge is the understanding that presumably altruistic organizational activity actually serves the maintenance of the institution.

These studies suggest a triple possibility for the influence of ecclesiastical structures on priest resignations. These structures may (1) directly cause resignations, because they are organized contrary to professional norms; (2) indirectly facilitate resignations, though organized in accordance with professional norms; or (3) be irrelevant to resignations. There are

* Direct all communications to: John Seidler; Department of Sociology; Ohio State University; Columbus, OH 43210.

This research was supported in part by funds made available through a National Science Foundation Science Development grant to the University of North Carolina at Chapel Hill. I wish to thank the following people for their helpful comments on earlier drafts: Hubert M. Blalock, Russell R. Dynes, Gerhard E. Lenski, Katherine Meyer, Richard L. Simpson, and anonymous reviewers. I also wish to thank Robert Szafran for comparing my data with the Schoenherr-Greeley data.

¹ It should be noted that that diocese has made major modifications in the work structure of priests since that study, and in answer to the problems pointed out in the study.

surely other possible relationships, but these three will give focus to the current investigation.

Other authors have considered the consequences of priest resignations. Fichter (1974), NORC (1972) and McClory (1978) all pointed to the institutional crisis induced by recent resignations combined with seminary losses. Fichter, however, conveyed a tone of optimism about future church structures, partly because he noted and promoted the direction of renewal—toward increased clergy professionalism and greater democracy. At the same time, many of these writers (e.g., Greeley, 1977; chap. 8) depicted a rather conservative set of American bishops who have overlooked the institutional crisis and continued to act in a traditional manner.

These and similar studies suggest three possible consequences of priest resignations: (1) they may create a conservative backlash by bishops; (2) they may promote modernization; or (3) they may be irrelevant to diocesan structures.

The study presented here (concentrating on diocesan priests and the diocesan structure in the United States) will investigate the six possible relationships mentioned above between church structure and priest resignations. The period of analysis is 1966–1970—the same period of time studied by the authors treated above. This study will consider also various models of organization to which the diocesan (and other) church structures may have conformed during that era, as implied by the findings.

This paper argues that the findings, in many ways surprising, can best be interpreted by applying the concept *lazy monopoly* to the Catholic diocese, and even to international Catholicism. The lazy monopoly thus is used as a model to summarize a good deal of the findings, and will be discussed later in the paper.

EXTENT OF RESIGNATIONS

Resignations of clergy became a new problem for the Catholic church in the late 1960s. Resignation rates rose gradually among diocesan priests in the United States from about .1% annually in the

1940s and 1950s to about .5% in 1965 and 2% in 1969 (NORC, 1972:277; Schoenherr and Greeley, 1974:408).

Net losses to the active clergy only very recently have become apparent. Though an estimated 10% of clergy resigned the active ministry between 1966 and 1972 (Schoenherr and Sørensen, 1975), *net* losses appeared to be smaller, probably due to replacement by new ordinands, postponed retirements, and other factors. Fichter (1974:22), for example, notes a net loss of only 2.5%, from 59,892 American Catholic priests in 1967 (the peak year) to 57,421 in 1972. But, with numbers of diocesan seminary students drastically down, from 26,200 in 1966 to 13,600 in 1972 (Schoenherr and Sørensen, 1975), the problem of priest replacement has become increasingly acute. Thus, the most recent estimate of net losses among active American clergy (McClory, 1978) is 14%, from about 59,000 in 1966 to about 51,000 in 1978; these figures obviously reflect the combination of high resignation rates and low replacement rates.

But even in the early 1970s the problem was noticeable to many. According to my own data, 24 dioceses lost 10% or more of their priests to resignations during the period 1966–1970, and one diocese lost almost 19% in this way. In the larger context, too, the problem was there; religious professionals, including nuns, were not so abundant as before. Resignation rates for priests belonging to religious orders (those not directly subject to a bishop) were even higher (Fichter, 1974:22; NORC, 1972:277), and the decrease in total church professionals from 1966 to 1972 was 15.3%, according to official church statistics (Fichter, 1974:21).

ANTECEDENTS OF RESIGNATIONS

In keeping with the distinction, made above, between directly causing resignations and indirectly facilitating resignations, antecedents were labelled as either *causes* or *facilitators* of exiting. Of course, the causal nature of an antecedent cannot be established with certainty, and the dividing line between cause and facilitator is somewhat arbitrary. Nevertheless, the distinction seemed useful.

Causes were those antecedents deriving from a constitutive theory of commitment: that is, they reflected social conditions thought necessary to maintain morale or a viable network of professionals. As suggested earlier, causes of resignations might consist of a structure organized contrary to current professional norms.

Facilitators, on the other hand, were antecedents deriving from nonconstitutive theories about commitment; that is, they reflected social conditions which might influence commitment but which were not ordinarily considered an integral part of commitment. In addition, they might even consist of a structure organized in accord with professional norms, as mentioned above.

The present investigation took Schallert and Kelley's study as the starting point for developing antecedent structural variables. According to Schallert and Kelley (1970), the decision to resign the ministry arose from an atmosphere in which change-oriented priests were frustrated with ecclesiastical structures. Resignees, over 300 of whom were interviewed in depth, embraced the values of individual freedom, less rigid authority, personalism, evolution of dogma, a pastoral orientation, and a dynamic view of structures. Frustrated in attempting to live by these values, and alienated, they decided to resign when a crucial other, symbolizing the ministry, let them down.

Most of these conditions—authority patterns, freedom, pastoral and change orientations—were largely determined by the Ordinary (chief bishop) of a diocese. These and other bishop-related conditions of the clergy climate were included in the present study. In fact, four categories of structural conditions were included, in an effort to investigate causes and facilitators of resignations.

First were three conditions indicating episcopal policies. They were democratic leadership by the Ordinary, clergy autonomy, and negative sanctions. These (or their opposites) would be considered causes of priest resignations under two constitutive theories: (1) an increasing norm of church democratization and clergy professionalism, requiring an appropriate climate for priest commitment

(Schallert and Kelley, 1970; Fichter, 1974); and (2) the inappropriateness of negative sanctions in a normative organization (Etzioni, 1961).

Second were five conditions indicating the informal climate among clergy, but still reflecting the bishop's style. They were ideological polarization between bishop and lower-level clergy, cross-status friendships among clergy, friction initiated by lower-level clergy and aimed at the bishop, solidarity among dissident priests, and priest passivity and disillusionment. These, too (or their opposites), could be considered causes of priest resignations under various explanations requiring consensus or social solidarity for continued commitment (Fichter, 1974).

Third was a set of mostly stable, nonbishop-related conditions reflecting the environment or general diocesan salience. They included the urban concentration of a diocese, relative size of the Catholic population of the area, diocesan size, and regional dominance (i.e., whether the diocese was a regional bureaucratic center for ecclesiastical matters). None of these conditions (or their opposites) could be considered a cause of priest resignations, since most people do not regard them as absolutely essential for a viable clergy. Yet they could perhaps trigger or facilitate resignations. For example, an urban environment could raise clergy consciousness about other career options.

Finally, there were five characteristics of the formal structure which were at least potentially policy matters of the bishop, but tended to be relatively stable during this period, due to diocesan size, traditional structural arrangements, and long-standing commitments of personnel. They were average number of priests per parish, average length of service before becoming pastor, task specialization (percentage of priests in nonparish work), size of the priest teaching corps, percentage of parishes run by religious clergy (i.e., priests whose main allegiance is to a religious order and not the episcopal structure—e.g., Dominicans, Franciscans, Jesuits). Some of these variables could be considered causes of priest resignations, since they might trigger dis-

satisfaction with career advancement or job satisfaction (Hall and Schneider, 1973); others would probably be facilitating conditions, indirectly leading to dissatisfaction.

Although all of these conditions were possible antecedents of priest resignations, some explanations seemed more likely than others. Episcopal policies and clergy climate were expected to be the major determinants of priest resignations, partly because of Schallert and Kelley's (1970) findings and partly because of a similar pattern found to hold for explaining priest protest aimed at bishops (Seidler, 1972). In addition, the bishop seemed quite salient in those days. In the late 1960s, conditions set rather directly by the Ordinary seemed crucial. Authority problems were paramount. Clergy constantly discussed the way bishops treated their subjects, how frequently sanctions were administered and whether they consisted of nondesirable transfers and other punishments. Priests compared dioceses to discover if the bishop ran each location on fear or whether in other places he aimed at consensus governing. Certainly leadership policies, whether democratic, punitive, or respectful of clergy autonomy, would be crucial in holding clergy to their priestly commitment. Certainly compliance structures that underscored normative consensus and the use of rewards rather than punishments would increase priestly satisfaction with their work. Surely a socially integrated diocese—with lower-level priests sharing friendship with the bishop and his staff—would prevent resignations. Such structural conditions deriving largely from the bishop's leadership policies appeared early as the best explanation of priest resignations.

CONSEQUENCES OF RESIGNATIONS

Using the same sets of variables, and regarding them as a dynamic system of interplaying conditions, I investigated the feedback of resignations upon the features previously considered as antecedents. Thus the same variables came under consideration, with the exception that those

under categories three and four (the more stable characteristics of structure and environment) seemed too stable to be reactive.

Resignations obviously could have a variety of structural consequences. Solidarity might increase with the loss of troublemakers. Or disillusionment might grow with the feeling among those who remained that leaders did not make concessions to justifiable demands of potential resignees. Policies might tighten in the hopes of denying freedom and temptation to other clergy, or policies might relax as a sign of increased trust in the faithful remnant.

One could argue that bishops who suffered the greatest loss of resigned priests would get the message and set up a more democratic, progressive clergy climate. Such is implied by Hirschman (1970), who emphasizes the symbolic nature of exiting (resigning). Managers (here bishops) who experience increased exiting will realize that clients or members are displeased with the product or organization. Efficient and competitive managers will try to cut losses by changing policies in favor of a more desirable product or organization.

In this case, however, I expected differently. Judging by a similar feedback from priest protest, I thought any change triggered by resignations would be towards less democratic leadership, less clergy autonomy, and perhaps increased use of negative sanctions by the bishop, rather than towards a more democratic policy. The bishop would probably assume that too much freedom resulted in the temptation to withdraw commitment. I knew also that bishops were generally rated as strikingly more conservative than lower-level clergy (Seidler, 1972), and so I expected such restrictive policies to reflect the natural tendency of traditionalists trying to curb liberals. In addition, the long run impact of seminary and clergy shortages were not yet apparent.

Secondarily, however, I expected the informal clergy climate to be improved by priest resignations, since presumably the marginal and divisive priests would have resigned and thus allowed for greater overall solidarity among remaining clergy.

MODELS OF THE CHURCH

Models of the church abound in general studies of Catholicism especially regarding the locus of authority. Fichter (1974:61-3) maintains that the church, considered as a worldwide structure, is in transition from a pre-Vatican monophasic system (all power centralized at the Vatican) to a polyphasic one (a decentralized and representative form of organization), in which the basis of organizational solidarity becomes consensus rather than loyalty to the hierarchy (81). Greeley (1977) seems to stress that the church is still formally an international monolith, when he underscores the importance of the pope's birth control decree, and the crucial impact of the pope's American delegate. But at the same time he points to an informal, communal and ethnic structure within the formal structure.

Theologians and pastoral planners, too, suggest a plethora of church models, but they generally describe a tension between hierarchical and more democratic structures which are theologically justified and only slowly gaining ground in practice. Küng, for example, describes certain continuing features as absolutistic or monocratic (Küng, 1976:520-1), while he opts for a pluriform church in the ideal (Küng, 1976:475-509). Dulles (1974), too, scores the monopolistic tendencies of the church which operated largely as a closed society, while he looks for an authority of service, shared responsibility, and subsidiarity, or local variation.

Models of other structural features, such as communication and common clergy understandings, also are discussed. Goldner et al. (1977) suggest a change in the church from monolithic control over explanations of ecclesiastical actions to a more democratic communication system in which official and counterofficial interpretations compete for acceptance by clergy. More and more, hierarchical structures are viewed as engaged in ordinary political activity instead of divinely inspired actions to be revered. Greeley, without using the same label, also has underscored the growth of cynicism, especially in his treatment of the consequences

of the pope's birth control decree (Greeley, 1977: chap. 7; Greeley et al., 1976). A variety of models, then, have been utilized to analyze the changing situation of authority, idea exchange, and common perception among American Catholic priests.

Models of the church also were implied in the expectations discussed above as antecedents or consequences of resignations. First, I have generally assumed the relative autonomy of each diocese, with the Ordinary able to lead in an autocratic or democratic way, as he chooses. In this sense, the international church was not seen as a complete monolith or monophasic system centered in Rome, but as at least partly polyphasic. Subsidiarity or home rule was the assumption, so that clergy commitment and climate were dependent upon what happened in that diocese, which was viewed as a major center of action.

Second, the above expectations also implied a transition from monocratic leadership style to a democratic one at the diocesan level. Since new democratic principles were emphasized at the Vatican Council, priest hopes for changes in that direction were expected to influence the clergy climate. In dioceses where democratic leadership and informal solidarity existed, clergy commitment would be firm; where autocratic authority and hierarchic divisions continued, clergy commitment would slip.

Third, these models also implied a relatively closed social system. Internal influences, such as authority style and informal clergy climate, were thought to exert salient influence, while environment or other relatively stable aspects were seen as contributing minor impact. In addition, critical problems, such as clergy protest or resignations, were expected to be handled functionally by the authority structure.

Fourth, a pluriform church was implied, as local variations in leadership style and interpretations were viewed as substantial. Each diocese seemed to be its own unique mini-church.

Finally, these expectations implied that dioceses in which priests remained strongly committed were headed by ad-

ministrators (bishops) who minimized the production of cynical knowledge. They presumably accomplished this by modernizing local structures and infusing them with the spirit of Vatican II, thereby defusing clergy criticism of ecclesiastical self-interestedness.

HYPOTHESES

Specific predictions are summarized in Table 1, relating structural conditions to resignations in both antecedent and consequent direction. In addition, a more detailed causal model showing predicted direct and indirect relationships was developed. In order to save space, the details of that model are not given here.

METHODS

1. Data Sources

I used two data sources for information on dioceses. The first was my own survey of 1,279 diocesan priests in all 137 Latin-rite dioceses that had ten or more diocesan priests at that time (1966-1970). The

survey mailed in February 1971 yielded a return rate of 74% (941 usable questionnaires). These questionnaires then were combined within each diocese to create diocesan scores.

Questionnaires in this survey were brief and they elicited information mostly about clergy relations and events of the immediately preceding five-year period, which began with the completion of the Second Vatican Council (December 1965). Resultant variables are listed in Appendix 2 as X_1 - X_9 .

The second data source was a directory of basically demographic traits of American clergy (Luzbetak, 1967). Since these data referred to relatively stable structural conditions as they existed in 1966, the first year of the observation period, they were used as antecedent conditions in the analysis. These variables are listed in Appendix 2 as Z_1 - Z_9 .

2. Sample of Priests

In each diocese, my questionnaires were sent to ten priest-informants who were chosen after a detailed preliminary investigation (see Appendix 1). For comparability of judgment, I chose priest occupants of ten different structural positions in each diocese, including one member of the Priests' Senate or Council, a Newman Chaplain, a member of the liturgy Commission, a member of the information staff, and a Dean or Vicar. All informants were priests beneath the rank of bishop and below the position of chancellor. The selection of a range of positions (excluding extremes) was intended to reduce reporting bias (see Appendix 1).

3. Questions

Fixed-answer questions focused on clergy relations, especially the authority climate. For example, informants were asked to rate the religious progressivism of the Ordinary and the degree of camaraderie among various groups of clergy. They also were asked to recall the number of priests who had resigned the priesthood during the previous five years—occurrences which were much discussed in the priestly grapevine during those days.

Table 1. Predicted Impact of Structural Variables on Resignations and Vice Versa

Structural Variables	Predicted Relation to Resignations	
	Antecedent	Consequent
Episcopal Policies		
Democratic Leadership	-	-
Clergy Autonomy	-	-
Negative Sanctions	+	+
Clergy Climate		
Ideological Polarization	+	-
Cross-Status Friendships	-	+
Priest Protest	+	
Dissident Solidarity	+	-
Clergy Passivity	+	
Environment and		
Diocesan Salience		
Urban Concentration	+	
Percent Catholic		
Population	-	
Diocesan Size	+	
Regional Dominance	+	
Stable Formal Structure		
Priests per Parish	+	
Duration of Assistantship	+	
Staffing by		
Religious Clergy	+	
Teaching Corps	+	
Priests in Nonparish Work	+	

4. Reliability

For this kind of data, reliability of information seemed solid. Average internal consistency among informants within each diocese was .8, according to an adaptation of the split-half reliability formula. (For details of this and other aspects of reliability and validity, see Appendix 1.)

5. Assigning Diocesan Scores

For each item diocesan scores were created by averaging responses given to that question by priest-informants of that diocese. Since these responses concerned diocesan conditions and climate, they were considered structural estimates from the beginning, without need of transformation from individual to organizational unit of analysis.

6. Sample of Dioceses

This survey sampled all 137 dioceses as defined. And the definition eliminated only eight dioceses, either because they had fewer than ten diocesan priests or because their boundaries had changed during the period of observation. For practical purposes, then, the total population was sampled. But in most of the analysis for this paper, I used 131 dioceses (96% of the cases) in which there were no missing data for any variable.

7. Analysis

The major technique of analysis was regression. The strategy was first to trim the number of important variables by regressing resignations on all possible independent variables. The second step was to develop statistically testable networks of variables, given the information from step one and following the restrictions of causal modeling. But the networks could not be simplified to one-directional causation, since I wished to test the consequences of resignations discussed above. And so the third step was to test plausible nonrecursive models; I allowed for feedback from resignations, and used two-stage least-squares (TSLS) procedures to estimate coefficients.

TSLS is a technique to obtain regression coefficients for equations of a non-recursive model, when ordinary least squares is inappropriate. TSLS is useful for static models, in which data are collected at only one time period, but in which quick feedbacks are assumed to occur (Christ, 1966: 432f.; Namboodiri et al., 1975: 513-9). The procedure involves the use of simultaneous equations. (For additional information, see Appendix 1.)

In this analysis, I assumed that all variables drawn from the demographic data source were exogenous, as antecedent in time and relatively stable. The others were thought to be part of an intertwined clergy climate and thus endogenous. Before running the analysis, I tested most of the assumptions necessary for regression and two-stage least-squares analysis (see Appendix 1).

8. Variables

The measurement of all variables, along with reliability and validity scores, where appropriate, are given in Appendix 2. But I will repeat here the measurement of the main variable of interest—priest resignations. As noted, informants reported the number of priests who had resigned in their diocese during the preceding five-year period. Agreement within diocese on this item, as measured by a reliability score of .97, was high. Agreement was also high between these resignation scores and those obtained through official channels by Schoenherr and Greeley (1974). [The Pearsonian r , comparing the two data sets in 55 dioceses, was .91.]

To calculate the diocesan score, I divided the average number of priest resignees, as reported by informants, by the total number of diocesan priests in that diocese for 1966. Thus I created a percentage of diocesan clergy who had resigned the ministry during the five years.

FINDINGS

1. Antecedents

As predicted, many structural conditions appeared to influence diocesan res-

Table 2. Stepwise Regression of Priest Resignations on All Possible Structural Influences

Explanatory Variable	Beta	Significance of Regression Coefficient	Added R ²	Total R ²
Control Variables*			.135	.135
Staffing by Religious Clergy	.365	.001	.119	.254
Clergy Passivity	.327	.001	.103	.357
Percent Catholic Population	-.240	.001	.051	.407
Regional Dominance	.183	.01	.029	.436
Dissident Solidarity	.139	.01	.017	.453
Duration of Assistantship	.156	.01	.014	.467
Negative Sanctions	.111	.025	.009	.476
Clergy Autonomy	.159	.01	.016	.492
Priests in Nonparish Work	.097	.05	.008	.500
Cross-Status of Friendships	.094	NS	.003	.503
Priest Protest	.140	NS	.006	.509
Diocesan Size	.136	NS	.005	.514
Urban Concentration	-.107	NS	.005	.518
Ideological Polarization	.054	NS	.002	.520
Democratic Leadership	.095	NS	.002	.522
Teaching Corps	-.047	NS	.001	.523
Priests per Parish	.062	NS	.001	.524

Notes: N = 131.

* Control variables included summary diocesan scores for possible bias due to position, age, religious liberalism, absence, and disagreement among informants.

ignation rates. Nine of 17 postulated influences had statistically significant regression coefficients at .05 (see Table 2). As expected, episcopal policies made some difference, as negative sanctions and clergy autonomy appeared to promote resignations. Also as expected, the informal clergy climate was apparently influential: priest passivity and dissident solidarity seemed to trigger resignations. Finally, environment and formal structure were quite important. As expected, the percent of parishes staffed by religious clergy, regional supremacy, duration of assistantship, and priests in nonparish work all appeared to promote resignations; size of Catholic population appeared to prevent resignations. Only one of these relations was in the direction opposite to that predicted—clergy autonomy.

The pattern of relationships, however, was not as predicted. The greatest portion of the variance (23%) was explained by environment and formal structure; while episcopal policies explained only a small fraction (3%) and clergy climate explained a modest amount (13%). This is especially remarkable by contrast with a model explaining priest protest.

The following comparative data, taken

from a companion analysis using identical variables² to explain both resignations and priest protest, are illuminating. Episcopal policy and clergy climate accounted for 49% of the explained variance of priest protest, but only 7% of the explained variance of resignation rates. Variables of environment and formal bureaucratic structure accounted for only 5% of the variance of priest protest, but 25% of the variance of resignation rates. Clearly the authority relations and informal climate among bishop and clergy were much more important in triggering protest than in causing resignations. On the other hand, environment and formal structure were more salient in triggering priest resignations.

Finally, the greatest impact on resignations seemed to come from variables I classified as facilitators rather than causes. True, four of the significant regression coefficients reflected causes drawn from constitutive theories. But

² In order to use identical variables, two variables that were not theoretically appropriate for the analysis of conflict had to be dropped, though they were used in Table 2. They were estimated clergy passivity and estimated degree of priest protest. As a result, explained variance figures reported in this textual paragraph differ to some extent from those given in the preceding paragraph.

three of the four most strongly related variables—i.e., each accounting for more than 2% of the variance of resignations—were classed as facilitators. These were: staffing by religious clergy, percent Catholic population, and regional dominance; they explained 20% of the variance, compared with 10% explained by the fourth, probably a causal variable—clergy passivity.

2. Consequences

Consequences of resignations could not be tested in such a straightforward way, due to the strictures of feedback models (see Appendix 1, #4). And so I organized the variables into a network of endogenous variables (episcopal policies and clergy climate), influenced by exogenous variables (all others). As mentioned above, exogenous variables were relatively stable variables, obtained from the demographic source and dating from 1966, the beginning of the period of observation. These were assumed to be only antecedents and not consequences.

I then tested the theoretical model mentioned earlier, incorporating the findings displayed in Table 2 and trying the feedback of several variables within the endogenous set. I especially tested the plausible consequence of priest resignations on all other endogenous variables. Using two-stage least-squares techniques, I eventually found the best fitting and most parsimonious empirical model, which is displayed in Figure 1 and tabulated in Table 3. Note that variables which were not empirically part of the causal network are omitted.

Priest resignations had no discernible impact on any of the endogenous variables. In fact, the only feedback that appeared in the findings was the negative influence of ideological polarization (X_3) on democratic leadership of the bishop (X_1). This finding is in line with predicted conservative tendencies of bishops, when clergy become too liberal for them, since the polarization measured was that between bishop and more progressive clergy. But the data lend no support for a retrenchment caused by resignations themselves. They also do not support the

other expected result of resignations, namely, a betterment of the informal clergy climate.

By contrast, episcopal policies apparently turned conservative in reaction to priest-initiated conflict aimed at bishops. As shown in Table 4, the impact of such priest rebellion was thorough, according to the causal analysis. Direct impact apparently occurred on episcopal leadership and use of sanctions, both of which showed a tightening of the reins of leadership—restricting democracy and employing more negative sanctions. In addition, priest protest seemed directly to enhance solidarity among dissident clergy. Indirectly, too, priest-initiated conflict, reducing clergy autonomy and cross-status friendships, and increasing ideological polarization, influenced other aspects of the clergy climate.

3. Models of the Church

The above findings reflect the operation of models of the church along the lines I expected, but with major modifications. As expected, there was a degree of local *episcopal* autonomy, reflected in substantial variation in the following factors: democratic leadership, progressivism of bishop, negative sanctions, clergy autonomy. Mean standard deviation of these variables, standardized for comparison,³ was 1.61 which was high in comparison with all other variables. If we judge by informal comments at the end of questionnaires, dioceses ranged from extremely progressive to extremely reactionary. And all of this was clearly understood by the local clergy as a reflection of the particular bishop. In this sense, then, the Catholic church of that era was not completely monophasic, but somewhat pluralistic or polyphasic.

Second, the transition from an autocratic to a more democratic style of leader-

³ Standard deviations were standardized by dividing by the possible range and multiplying by ten. An example of smaller variation occurred in the "error" or control variables, whose variation had been consciously minimized by the research design. They showed a mean standardized standard deviation of .68 (see Seidler, 1974c:828).



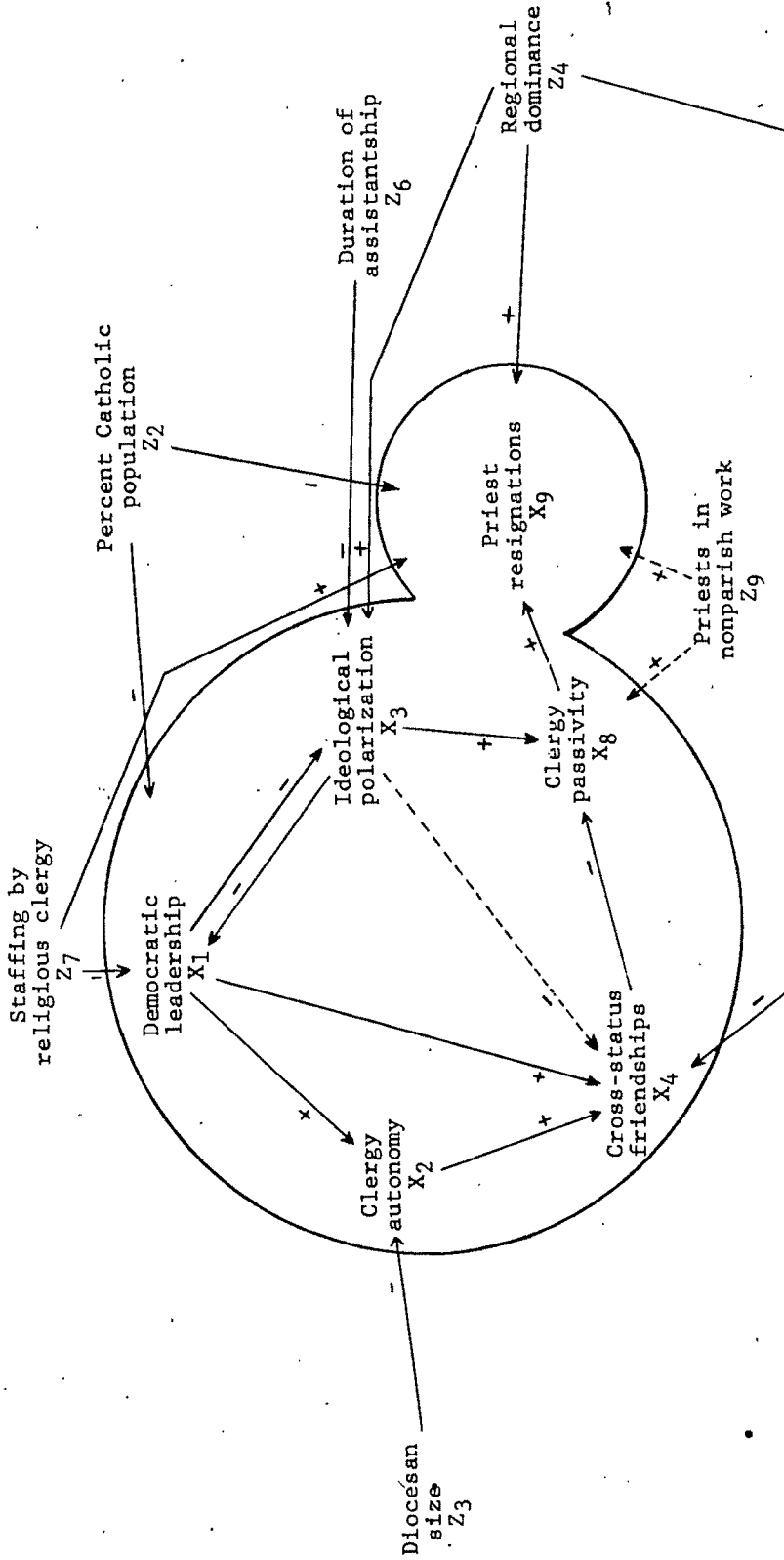


Figure 1. Empirically Supported Model of Priest Resignations (Solid arrows represent significant relationships. Broken lines reflect marginally significant relationships, with $p > .05$ and added $R^2 < .02$.)

Table 3. Regression Coefficients and Explained Variance for Nonrecursive Model

Dependent Variable	Explanatory Variable	Regression Coefficient	b/sd of Regression Coefficient	Significance Level	Added R ² *	Total R ²
Democratic Leadership	Control variables**					.130
	Percent Catholic population	-.030	1.818	.05	.017	
	Staffing by religious clergy	-.037	1.921	.05	.030	
Clergy Autonomy	Ideological polarization	-.445	2.473	.01	.223	.399
	Control variables					.082
	Diocesan size	-.284	1.958	.05	.034	
Ideological Polarization	Democratic leadership	.795	1.583	.10	.215	.331
	Control variables					.075
	Regional dominance	1.491	2.486	.01	.039	
Cross-Status Friendships	Duration of assistantship	-.091	2.369	.01	.031	
	Democratic leadership	-.494	2.539	.01	.238	.382
	Control variables					.135
Clergy Passivity	Regional dominance	-.748	2.270	.025	.058	
	Democratic leadership	.368	2.886	.005	.487	
	Clergy autonomy	.135	3.168	.005	.034	
Priest Resignations	Ideological polarization	-.176	1.464	.10	.010	.724
	Control variables					.041
	Priests in nonparish work	.101	1.398	.10	.016	
	Ideological polarization	1.231	1.686	.05	.134	
	Cross-status friendships	-1.419	1.650	.05	.107	.298
	Control variables					.135
	Percent Catholic population	-.569	3.291	.001	.042	
	Regional dominance	13.80	2.184	.025	.067	
	Staffing by religious clergy	.907	5.115	.001	.103	
	Priests in nonparish work	.344	1.404	.10	.019	
	Clergy passivity	1.071	1.466	.10	.080	.446

Notes: This represents a trimmed model, with nonsignificant variables omitted. N = 131.

* Since the noncursive program did not print added R² for each variable, added R² was computed by running several equations starting with control variables and adding one significant explanatory variable to the equation in each subsequent run. R² was the R² for the equation which had that variable minus the R² for the preceding equation.

** Control variables included summary diocesan scores for position bias, age bias, religious liberalism bias, absence bias, and residual disagreement among informants.

ship at the local level seemed to have become an *idealized norm*. Clergy who acted as informants for this survey—all of whom occupied a position of responsibility in the diocese—judged themselves as substantially more progressive than bishops. And the most common written complaint was

that the bishop acted in an arbitrary and nondemocratic style.

But several modifications need to be made, and all of them rest on a distinction between two different issues: diocesan harmony and clergy commitment. In general, the expected models applied when

Table 4. A Comparison of the Impact of Priest Protest and Resignations on Episcopal Policies and Clergy Climate

Dependent Variable	Independent Variable			
	Protest		Resignation	
	Relationship	Added R ²	Relationship	Added R ²
Democratic Leadership	-	.29	NS	.00
Clergy Autonomy	-*	.00	NS	.00
Ideological Polarization	+	.00	NS	.00
Cross-Status Friendships	-*	.00	NS	.00
Negative Sanctions	+	.16	NS	.00
Dissident Solidarity	+	.19	NS	.00

* Asterisk indicates significant indirect impact, through other variables.

the issue was harmony but not when the issue was clergy commitment.

The first modification is that style of home rule was only partially important. Although episcopal leadership was an important determinant and consequent of priest protest, it appeared to be neither a strong antecedent nor consequent of clergy resignations. More important than local pluralism or home rule were the local environment, staffing, and bureaucratic structures.

Second, democratic structures seemed only partially important. Although clergy harmony seemed to depend heavily on the degree to which the local diocese incorporated emerging ideals of democracy, service orientation, and informal solidarity, these seemed less important for clergy commitment. Instead, structural facilitators or opportunity were more salient.

Third, the diocese thus operated only partially as a closed system. Authority relations and clergy climate operated as a rather complete system, impervious to outside influences, when the issue was harmony. But in the case of resignations, this system was not able to contain important influences, as resignations were triggered by outside factors.

Finally, the lack of feedback from resignations, combined with the conservative reaction to protest, apparently indicated a lack of sensitivity by authority figures to professionals and their grievances. We can surmise that such lack of sensitivity may have produced a cynicism about church authority. In addition, bishops and their advisors showed a lack of interest in competition. Whereas they reacted negatively where priest protest was in high gear, they simply let priests with decreasing commitment move to another occupation or market.

THE LAZY MONOPOLY

The lazy monopoly may serve as a useful concept in understanding American Catholic dioceses of that era. Adapted from Hirschman (1970), it is a complex model which incorporates aspects of environment, leadership, exiting, and feedback from exiting.

The criteria for applying this concept (Hirschman, 1970:57-75) can be generalized as follows: (1) The organization is a virtual monopoly—i.e., has singular control over a resource or product. (2) Executives are slow to improve the quality of product, policies, or the structure of the organization. (3) Executives, rather than improving quality, prefer to lose clients or personnel who exercise voice (criticism). (4) They welcome opportunities for critics to exit, often via limited competition. (5) These opportunities allow the continuation of status quo policies or mediocre leadership, as a loss of critics reduces the pressure for change and usually leaves the remnant on the conservative or uninvolved side.

In economic writing, the lazy monopoly had been introduced in French research and briefly noted in Anglo-Saxon literature (Hirschman, 1970:57-8). Albert Hirschman (1970: chaps. 5-6), wishing to underscore a neglected problem of monopolies, refined the notion. Besides the frequently mentioned exploitation and profiteering that can result from the profit-maximizing tendency, monopolies also indulge in the nearly opposite tendency to become flabby, inefficient, and lazy (Hirschman, 1970: 57). The outcome is described as follows:

The monopolist sets a high price for his product, not to amass super-profits, but because he is unable to keep his costs down; or, more typically, he allows the quality of the product or service he sells to deteriorate without gaining any pecuniary advantage in the process. (Hirschman, 1970:57)

Examples cited by Hirschman include utilities, railways, and the Post Office.

The strategy of lazy monopolies apparently consists of developing a product that is adequate for most clients, consumers, or members, but not equal to the standards of their most quality-conscious customers or personnel. Imagining a continuum with quality products drawing only praise at one end and low quality items drawing complaints at the other, executives of lazy monopolies choose a point in the middle range of the continuum. Thus they develop a product to reap adequate profits while losing critical clients. Such a tactic is that of a lazy person—pleasing

mediocre tastes and satisfying those who seek no changes.

Lazy monopolies ironically find comfort in competition (Hirschman, 1970: chap. 5). Minor competition can syphon off clients or members who most strongly demand quality performance. Given the opportunity for such clients or members to exit in favor of another company, the monopoly can remain in its mediocrity. According to Hirschman (1970:59) this applies "to small city or 'ghetto' stores which lose their quality-conscious patrons to better stores elsewhere." It also applies "to sluggish electric power utilities in developing countries whose more demanding customers will decide that they can no longer afford the periodic breakdowns and will move out or install their own independent power supply" (Hirschman, 1970:59). Hirschman also calls the U.S. Post Office a lazy monopoly thriving on limited exit possibilities, via telegraph and telephone, for those who can afford faster communication (Hirschman, 1970:60). Limited competition, or exit possibilities, make the shortcomings of mail service more tolerable. They also may allow such monopolies to "tyrannize" customers who cannot afford swifter forms of communication. Through such monopoly-tyrannies, the incompetent oppress the weak and the lazy exploit the poor (Hirschman, 1970:59-60).

Hirschman also uses political examples to show how exit possibilities rid lazy monopolies of voice (i.e., criticism). In Latin America, power holders traditionally encourage political opponents to move out of the country in voluntary exile. Columbian law provided that former Presidents be paid more handsomely if they lived abroad than if they remained in their own country (Hirschman, 1970:60-1). By contrast Japan has maintained a no-exit policy and the result has been a considerably more vigorous and constructive political process, based on the necessity of compromise. On the other hand, the Latin American exit policy has contributed to the factionalism and *personalismo* characteristic of their politics (Hirschman, 1970:61).

Other examples of lazy monopolies come to mind. Repair shops of car deal-

erships are notoriously careless and overpriced. As monopolies of a sort, they have more than enough business and can afford to be lazy. In fact, they often appear not to want a customer's business, especially if the customer is critical, and they thrive on the exit possibilities provided by nonaffiliated repair operations. In some states, public universities dominate higher education. As lazy monopolies, they often allow mediocrity in teaching while supporting research activities. They take comfort in limited competition from liberal arts colleges, which draw many who would demand high quality teaching.

THE CHURCH AS LAZY MONOPOLY

First, Catholic dioceses were monopolies. They maintained unique control over the opportunities of priestly ministry and organization of life for those ordained as diocesan priests. Dioceses effectively offered the sole opportunity for diocesan priests to continue serving, unless they wished, as extremely few did, to return to a noviceship and a new training in a religious order. And even if they decided to switch authority structures by joining a religious order, they would remain ultimately under the same bishop's jurisdiction if they wished to continue working in that locale. In addition, the opportunity to relocate in another diocese was not freely given. In my data, an average of only 1.4% of diocesan priests per diocese relocated to another diocese during the five-year period. Finally, only a very few priests, often in well-publicized episodes, chose to change denominations and continue as ministers in a Protestant church. But such an alternative was psychologically unlikely for those in a church that remained rather exclusive despite recent ecumenical gestures.

Second, Catholic bishops of the late 1960s were slow to improve the quality of structure or seriously to address fundamental issues. As shown above, increased resignation rates—a sign of a basic problem in clergy life—did not trigger changes in episcopal policy or clergy relations, at least for that period. Even vocal and other direct criticisms did not produce policy changes, except in the more conservative

direction. Since these criticisms came from a more liberal clergy and were aimed at an overwhelmingly moderate set of bishops (NORC, 1972; Seidler, 1972), such reaction to the right could not be considered an improvement in basic issues. At that time, lower clergy still complained in large proportions about the lack of such administrative procedures as due process, grievance mechanisms, and personnel assignments (Fichter, 1968; Seidler, 1974a; 1974b). It was not until the last year of investigation for this research that each diocese, by decree from Rome, set up a priests' senate, giving at least formal representation to lower clergy in the diocesan decision-making process, though these senates lacked real legislative power. Overall, then, bishops did not deal with fundamental clergy problems, since they dealt with neither explicit conflict nor resignations as legitimate feedback.

Third, the reaction of bishops and diocesan administrators appears to have been, "Let the troublemakers go." Indirect evidence points strongly in this direction. In the present data, Ordinaries made no conciliatory changes in the wake of priest resignations. And we know that those exiters were, on the whole, more liberal than stayers (NORC, 1972). Thus they would most likely have viewpoints in opposition to bishops. In addition, those who resigned often did so after suffering penalties resulting from confrontations with diocesan administrators, usually bishops.⁴ Furthermore, priest resignations frequently were publicized by church officials as the departures of disloyal clergy. Therefore, the lack of policy reaction to departures probably reflects an episcopal attitude of relief at such departures.

Fourth, bishops apparently welcomed the opportunities for exiting, when priests

wished to resign. Clearly bishops did not stop the resignations. And clearly the variation in resignation rates was largely explained by opportunities or facilitating conditions. For example, regional dominance, indicating bureaucratic centralization, probably eased the paper work of exiting. Priests in nonparish work—indicating full-time assignments of clergy to educational, counseling, or administrative tasks—probably eased the transfer to parallel nonpriestly roles. Percent of parishes run by religious clergy possibly indicated a knowledge of resignation procedures, and a desire to imitate other resignees, since the exiting rates of religious clergy were higher at that time (NORC, 1972:278). Finally small Catholic populations apparently minimized religious pressure to remain. Such social factors eased the transition of resigning priests to the competition—i.e., a nonpriestly career. They also apparently gave bishops the welcomed chance to neglect structural shortcomings by watching the most dissatisfied clergy depart.

Fifth, bishops maintained a status-quo policy—i.e., no change—as an outcome of resignations. In addition, they moved in a conservative direction in reaction to the simultaneous problem of clergy conflict, as noted above. Again, since conflict was initiated mainly by more liberal clergy, this tactic, combined with the lack of reaction to priest resignations, shows that bishops considered neither protest nor departure a legitimate form of criticism. Rather, exiting was no doubt a release from the need to move ahead.

Therefore, American dioceses can be described as lazy monopolies during that era, as their actions were parallel to those of officers of nonreligious lazy monopolies, who allow disgruntled clients to retreat from their own product to something else rather than deal with basic issues. Variations, of course, existed in the degree to which each diocesan monopoly was lazy, but the general pattern seems to have fit this model.

International Catholicism also could be labelled a lazy monopoly. First, it was a monopoly because all western Catholic clergy remained under the jurisdiction of Rome. Though within limits bishops could

⁴ In some cases, such as that of William DuBay of Los Angeles, both protest and resignation were dramatic and highly publicized. In others, the connection between protest and resignations was not so well-known. For example, the protest by priests in Washington over that bishop's stand on the papal decree on birth control was well publicized, but the subsequent resignation by many of them, after being silenced and stripped of responsibilities, was only widely disseminated in the local ecclesiastical grapevine.

set local conditions for clergy, the Vatican still controlled basic rules of priestly life. In addition, the worldwide Catholic monopoly became exceptionally salient for clergy during that era. The Vatican Council (1962–1965) drew great attention to the new spirit initiated in Rome and dependent not only upon Council documents but also upon follow-up actions by the Vatican. Indeed, the pope's appeals to prudence and gradualism clearly set a restraining tone to diocesan progress, and rising and frustrated expectations of diocesan clergy clearly were associated with Vatican impulses.

Second, international Catholicism was hesitant to come to grips with fundamental issues, even while undergoing modifications introduced at the Vatican Council. For example, the Vatican held firm to its celibacy ruling for priests, though the desire to marry was a crucial element in the decision of American priests to resign (Schoenherr and Greeley, 1974), and though recent research has shown the arbitrariness of the celibacy law. In addition, the Vatican bureaucracy only slightly tempered its structure, though a basic overhaul was considered of utmost importance, and most decrees of universal change concerned matters of style or presentation, rather than basic normative or structural matters (Davis, 1967:13–4).

Third, international Catholicism was happy to be rid of troublemakers. Here, the process of official resignation is enlightening. Clergy who desired to resign made written application by using a few officially acceptable reasons for asking release of vows. These reasons effectively defined the person as deviant. Others, electing to marry first without official approval quickly were released from the clergy ranks.⁵ Thus "misfits" were gladly sent off, while the purity of hierarchy officially was preserved.

Fourth, the Vatican allowed opportunities for "deviants" to exit. Deviant definitions clearly were broadened to cope

with the increased volume of requests for resignations, and thus to allow greater opportunity for exiting. Thus the Vatican readily granted permission for those defined as deviant to depart.

Fifth, international Catholicism essentially maintained the status quo and apparently appeased the loyal conservatives. Pope Paul is generally thought to have catered to the conservative Vatican bureaucracy in doctrine and discipline, even while promoting the spirit of Vatican II in symbolic ways. In addition, his reign brought a slowing of the Council bandwagon, which was perceived by many as a turn to the right.

DISCUSSION

1. Monopolies in the Wider Religious Scene

Roman Catholicism has no doubt changed its form of monopoly. In earlier decades, when it disallowed clergy resignations and criticism, it might have been named a totalitarian monopoly. But the winds of change, legitimated at the Vatican Council, apparently initiated a new organizational strategy. Church officials, enmeshed in the ecclesiastical establishment, could maintain conservative policies and a slow pace of change, in the face of strong progressive trends, by taking the shape of a lazy monopoly. Such a strategy, which may have lasted but a few brief years, seems worthy of note.

Other denominations also can be considered monopolies, whether lazy, totalitarian, or profit-maximizing. In many nations, including traditional Europe and Latin America, religious denominations long have monopolized a geographic region. And even today, despite the influx of American-based sects and increasing religious competition, many European countries (or specific regions within countries) maintain essentially monopolistic religions which allow minimal competition. Similarly in the United States, indications of Mormon territory, Baptist country, or Jewish ghettos perhaps reflect local monopolies within a broader context of religious pluralism.

Monopolies also can develop out of competitive situations. For example,

⁵ This information is known both from personal experience in dealing with the Vatican, and from informal sources—mainly a variety of friends who went through the resignation process or who counseled those desiring it.

though Protestantism apparently maintains a tradition of competition and religious freedom, reflected in current denominational switching (Roof et al., 1977), regionally monopolistic denominations thrived in early American colonies. More contemporary groups, too, have attempted to establish themselves as monopolies, though they began in the competitive market. Reverend James Jones apparently sought, through the People's Temple in Guyana, to create a tyrannical monopoly over his segment of the population—a tyranny in which both voice and exit were stifled. Other groups, such as the Unification church, also curtail the development of voice and exit, while creating an ideology that would support a future monopolistic role in society.

2. *Relation to Other Research*

As noted at the outset of this paper, the research reported here is related intricately to past studies of priest resignations, clergy climate, and other pertinent events of the same time period. The relationship between this research and those investigations can be summarized as follows; I have divided the findings reported here into those that are new, those that converge with other studies, and those that provoke new questions.

A. *New aspects.* New elements of this research include the lazy monopoly model, the test of short-run feedback, and significant structural effects on priest resignations. The last item requires further elaboration.

Other researchers have not discovered the statistical impact of structural factors on priest resignations, despite research on other occupations that shows the effects of such contextual influence as routinization and promotional opportunity (Price, 1977). True, Hall and Schneider (1973) found contextual sources of work dissatisfaction and tension among priests, but they did not explicitly examine resignations. More pointedly, Schoenherr and Greeley (1974), investigating aggregate and contextual sources of resignations, found practically no structural effects—only a slight effect from the aver-

age resignation rate itself, i.e., the "cumulative impact of many priests in the diocese planning to resign" (Schoenherr and Greeley, 1974:421). In fact, they concluded that, "aside from important but rare exceptions, higher level social influences are too remote and too dispersed to affect strongly a priest's personal decision to continue" (Schoenherr and Greeley, 1974:421-2).

Several factors may explain the discrepancies between their findings and mine. First, Schoenherr and Greeley omitted the five structural variables which in this study produced a significant impact on resignations. Perhaps their inclusion of organizational variables producing psychological inducement or cost (Schoenherr and Greeley, 1974: 418-9) led them to overlook apparently nonpertinent sources of resignations. Yet they did test a battery of variables, and their theory was broad. Nevertheless, the significant structural sources of resignations in this study were, as a matter of fact, unique.

Second, Schoenherr and Greeley (1974: 420-1) attempted to find structural effects, largely *in addition* to individual (or social psychological) effects, whereas I attempted to obtain structural effects *only*. Granted that in their study zero-order correlations between group-level and individual-level variables, including resignations, were very low (Schoenherr and Greeley, 1974:420), the impact of group-level factors might have been masked when attempting to explain additional influence on individual-level outcomes. Individual-level variables may partially usurp the explanatory power of contextual variables, especially when the contextual variables (e.g., average resignation rate) consist of the same items aggregated to the group level. If so, this may account for generally disappointing results of contextual variables in regression analysis (Blalock, 1969).

Third, Schoenherr and Greeley's path model implies structural influences, even though the variables are framed at the individual level. For example, in their model, modern values induce work dissatisfaction and a desire to resign, regardless of the motivation to marry (Schoenherr and Greeley, 1974:415). But

such sequences only make sense if the work climate or structure is regulated by traditional values. Modern values obviously imply new desires for the exercise of authority, job specifications, rules, and other matters, which go against prevailing structures, thus causing dissatisfaction.

Finally, the most unique element of structural findings presented here is the impact of facilitating variables on resignations. The element considered most theoretically pertinent—the route through passivity—finds continuity with Schoenherr and Greeley (1974) and Schallert and Kelley (1970), even though both their studies are primarily social psychological. We now turn to that continuity.

B. Convergent aspects. A general deprivation theme runs through the research on priest resignations. Schallert and Kelley (1970), in their qualitative study, stated that change-oriented clergy resigned because of alienation, the retention of traditional ecclesiastical structures, and a slow church evolution toward modern values. Such variables reflect a cramped (or deprived) professional climate. Schoenherr and Greeley (1974), in several diagrammed "routes" to resignations, displayed the following influences on the decision to leave: inner-directedness, modern values, work dissatisfaction, and loneliness. These factors also indicate deprivation of a satisfactory work or life climate.

Threads of continuity among these three studies, including the one presented here, are many, whether they be viewed from a psychological or structural standpoint. They include a gap between lower clergy and hierarchy, professional autonomy (or inner-directedness), modernization (or progressivism or change-orientation), social support (or loneliness), and work satisfaction (or passivity or alienation). This deprivation constellation can be considered one route to resignations.

A second parallel in all three studies is the *partial* explanatory role of the common deprivation constellation. The other investigators put heavy emphasis on an additional factor—desire to marry (Schoenherr and Greeley, 1974) or a let-

down by a significant other (Schallert and Kelley, 1970). In this study, facilitating factors come strongly into play.

In addition, results of this study converge with data on general job turnover. Leaving one's job has been associated with dissatisfaction, professionalism, and various work conditions, including centralization and lack of social integration (Price, 1977). Such conditions roughly parallel the deprivation constellation described here.

Job turnover also has been associated with the possession of transferable skills and opportunities to go elsewhere (Price, 1977), and these conditions roughly correspond to facilitating conditions as presented here.

C. Open questions. Questions naturally are raised about important variables from other research not treated in the present study. For example, how are these findings related to the strong relationship between resignations and the desire to marry (Schoenherr and Greeley, 1974)? In partial response, I will make three comments.

First, since priestly marriage is not a local option, the desire to marry does not translate to a diocesan policy issue. It is therefore not a diocesan-level cause of resignations, and it clearly does not fit the present model.

Second, however, the very irrelevance of the celibacy issue at the diocesan level may help explain why facilitating factors were more salient than causative factors. If indeed the desire to marry exercises a strong and independent pull toward resignations at the individual, but not diocesan, level, the analyst would expect causative diocesan influences to be weak.

Third, the lazy monopoly concept may be complementary to the finding about the desire to marry. This paper has argued that lazy monopolies are insensitive to constructive criticism. Following this line of reasoning, the Catholic hierarchy will not have answered fully the criticism of liberals until the Vatican changes its celibacy rule.

Another open question regards the relationship between this study and cynical knowledge (Goldner et al., 1977). Cynical knowledge, a basis for priest decommitment (Goldner et al., 1977), is said to have

developed during recent decades when Catholics became aware that hierarchical decisions were dictated by political and organizational considerations, rather than pure altruism. How does this explanation relate to findings presented here?

The cynical knowledge theory is distinctive in placing major explanatory emphasis on the manner in which lower participants perceive actions of officials. By contrast, the deprivation approach, including the causative element in the present research, underscores the effects of official actions—i.e., the conditions of work and life for lower participants.

Perhaps cynical knowledge and deprivation vary together on occasion. For example, cynical knowledge among diocesan clergy may emerge in those places where bishops are thought to resist modernization *because* of political or selfish considerations. On the other hand, perhaps disillusionment arises from deprivation or cynical knowledge operating separately.

Finally, cynical knowledge theory implies that church officials attempt to maximize personal or political gain. But the lazy monopoly theory suggests that the hierarchy, in its unwillingness to face such issues as celibacy, often may seek only an adequate, nonoptimum solution. In either case priest commitment may be lessened.

Questions obviously remain for future research. Which influences are more important for clergy commitment: the perception of a political and selfish hierarchy, or the alienation, passivity, and loneliness resulting from hierarchical decisions and experienced by clergy? Do we need a multi-source explanation, or does a single type of explanation suffice? And which kind of monopoly brings on higher resignation rates, the profit-maximizing monopoly or the lazy monopoly?

Turning directly to monopolies, researchers may ask under what conditions organizations tend towards monopolistic practices? In particular, when do they become lazy, rather than tyrannizing or profit-maximizing?

Finally, additional studies are needed to discover if the lazy monopoly applies to

church actions at other time periods, or only for this single "moment" in church history. Since 1971, structural innovations, such as diocesan pastoral councils, pastoral planning commissions, priests' senates, and personnel boards—but not optional celibacy—have been widely institutionalized in the United States. Perhaps these new structures were instituted because of the increased resignation rates. If so, the church may have begun to perceive the competition from attractive nonreligious career patterns to have gained strength, thereby challenging the monopolistic hold of the church on priests' lives. For it is only when the competition is weak that lazy monopolies are operative (Hirschman, 1970:57ff).

APPENDIX 1

ADDITIONAL DETAILS OF METHODOLOGY

1. *Preliminary investigation.* At first, about 15 structural positions, besides pastor and assistant pastor, seemed plausible informant positions, since they existed in most dioceses. But I suspected that they represented different branches of the information-grapevine and varying biasing pressures. I thus decided to investigate the degree of knowledge and bias I could expect from people occupying these positions by virtue of the structural slots themselves.

I sent questionnaires to 51 Catholic sociologists, particularly those specializing in the study of Catholicism. The 27 who completed questionnaires rated each position on expected bias and knowledge of clergy-bishop relations. Focusing on the reportage of tensions between bishop and lower-level clergy, they estimated extent and direction of expected bias, whether in favor of bishop or lower-level clergy. From the summarized ratings, I chose ten positions according to the following guidelines:

- (a) Only those with moderate to high degrees of expected knowledge were chosen.
- (b) As many as possible were chosen from the middle range of expected bias—i.e., those predicted to be relatively unbiased.
- (c) Positions expected to produce the greatest bias were eliminated. For example, the chancellor was eliminated because he was expected to be most biased in favor of the bishop.
- (d) A relatively balanced set of positions was chosen by selecting a few from each side of the bias continuum after all positions judged to be relatively objective had been included. The final set of ten ranged, thus, from those expected to be protective of the bishop (e.g., Dean or Vicar) to those expected to be critical of him (e.g., member of Priests' Senate or Council).

Weightings of the responses were not considered necessary, because biases were expected to balance. In addition, I created several control variables which

represented possible sources of bias, and these were expected to screen out error during the analysis itself.

The positions chosen were not always occupied in every diocese, nor was every diocese sufficiently differentiated to have every position. Thus, though ten positions were contacted in most dioceses, some dioceses received fewer than ten questionnaires. But six or more positions were always contacted. Even so, an average of seven questionnaires was completed in each diocese.

2. *Reliability and validity.* To test agreement of informants within each diocese, I adapted the split-half reliability formula to these data. After dividing informants in half for each unit of analysis, I obtained the correlation between mean scores of each half in all dioceses for a particular item. This correlation formed the basis for computing the split-half reliability coefficient. As mentioned above, average reliability across a subsample of eight questionnaire items was .8.

Of course, this was an imperfect adaptation of the split-half reliability formula. Informant halves often were imbalanced in expected bias, especially in those dioceses where the return rate was higher on one side of the bias continuum. In addition the mere splitting of a small sample (ten or fewer) increases the appearance of disagreement by creating two very small units which are likely to have different means. Hence the overall reliability coefficient is probably a low and conservative estimate of informant agreement.

Concurrent validity (see Kerlinger, 1965:447ff.) was examined by comparing a few items with information obtained in other studies or reports. Where similar data were collected by Greeley and Schoenherr (NORC, 1972), my findings coincided with theirs. As mentioned in the main text, a correlation of .91 was found between the two matched sets of 55 diocesan resignation scores for 1966-1970—one obtained by informants in this study and the other provided by official records in the Schoenherr-Greeley study (1974). In addition, total resignation percentages in the United States for those five years were similar, though computed differently. In my data the total was a weighted average of diocesan scores; in the Schoenherr-Greeley data, I extrapolated to the five years by adding the average yearly increment they discovered in the four-year period of observation. Results were 6.34% in my data and 6.1% in their data.

Other items, such as conflict events between bishops and clergy, were checked against newspaper accounts, and in a selected handful of dioceses, the exact events reported in the press also were recalled and reported by my informants.

3. *Analysis.* Since regression was the primary mode of analysis, I examined the appropriate assumptions, including linearity, homoscedasticity, and skewness. All were found to be within acceptable ranges, especially after two variables (diocesan size and teaching corps) were given a log transformation because of excessive skewness. All of the exogenous variables and one endogenous variable (percent resignations) formed interval scales. The rest were ordinal, having been derived from items

with five to seven fixed response categories, yet that had the appearance of interval scales after the averaging operation. Interval statistics were employed.

In developing causal networks, I placed variables in sequence according to theoretical considerations, previous research, and personal judgment. Where feedback was incorporated, it was assumed to be a quick adjustment, rather than a gradual or long range effect, in keeping with the nature of cross-sectional data and the assumption of two-stage least-squares analysis.

Since the model included two-directional causal paths, two-stage least-squares procedures were followed to estimate coefficients. Seven equations were composed for each stage, and the structural equations were all exactly identified or overidentified, leaving out at least $k-1$ variables from each equation (where k = the number of endogenous variables).

Multicollinearity problems were diminished by ruling out any independent variable that was correlated with another at $\geq .85$ (Althauser, 1971:453). Although a degree of multicollinearity probably persisted, findings turned out to be consistent, whether basic models were run with or without several substantially correlated variables. Hence findings reported here apparently represent the sense of the data.

All equations employed special control variables to screen out possible effects of measurement error. Such control variables included summary diocesan scores for position bias, religious liberalism bias, the extent of intradiocesan informant disagreement, and others (see Seidler, 1974c).

4. *Two-stage least-squares analysis.* Two-stage least squares (TSLS) is a technique to obtain regression coefficients for equations of a static but non-recursive model, in which the causal flow cannot be assumed to be one-directional or in which quick feedback is assumed. Since, in such situations, ordinary least squares would yield biased and inconsistent estimates of coefficients, an alternative, such as TSLS is required. The problem with ordinary least squares is that the error terms of individual equations cannot be considered independent of the endogenous variables that appear in the same equation as independent variables.

To solve this problem, we put equations in "reduced form"; only exogenous variables are used as independent variables. Thus the values of endogenous variables are predicted jointly by all (and only) exogenous variables (here: the control variables mentioned above, and $Z_1 - Z_n$). Then these predicted values are substituted for all endogenous variables *when they are acting as independent variables*. Their predicted values, in addition to observed values of pertinent exogenous variables, then, are used to compute a set of coefficients for each equation.

This procedure assures that the resultant error terms will be uncorrelated with the independent variables of each equation, so long as the exogenous variables are truly exogenous. This, of course, implies that they are uncorrelated with disturbances. Under the assumptions that each equation is identified, and that there are no specification or measurement errors, two-stage least-squares techniques

will produce consistent coefficients with negligible large-sample biases (see Christ, 1966: 432f).

APPENDIX 2

OPERATIONALIZATION OF VARIABLES

Z₁ Urban Concentration: proportion of parishes in towns or cities of greater than 10,000 population.

Z₂ Percent Catholic Population: percentage of Catholics in the population of the area.

Z₃ Diocesan Size (log): absolute number of Catholics in the diocese.

Z₄ Regional Dominance: status of diocese as province headquarters, i.e., administrative center for several dioceses in a region (scored 1 or 0).

Z₅ Priests per Parish: average number of diocesan priests per parish run by diocesan clergy.

Z₆ Duration of Assistantship: average number of years a priest remains as assistant pastor before being promoted to pastor.

Z₇ Staffing by Religious Clergy: percentage of parishes run by religious clergy (i.e., those subject to superiors of religious orders, and not primarily under a bishop; instead under a jurisdiction whose area is much broader than a diocese).

Z₈ Teaching Corps (log): absolute number of priests engaged full-time in teaching. (The absolute number, rather than a percentage, was chosen because it was thought that a critical mass for unrest could be achieved by a sizable group of scrutinizing academics, whatever their percentage of membership.)

Z₉ Priests in Nonparish Work: percentage of diocesan clergy engaged full-time in nonparish work.

X₁ Democratic Leadership of Bishop: a four-item scale, including informant estimates of the following: willingness to hear grievances, encouraging the participation of all priests in decision-making processes of diocese, desire for the diocese to serve all people, both inside and outside the church, and overall leadership. Reliability (Ω) was .90; validity (P_{TS}) was .95. (For measures, see Heise and Bohrnstedt, 1970.) In this model, democratic leadership (X_1) can be conceived of as representing, besides the items contained in that construct, a progressive attitude toward change. Such progressivism was highly correlated with democratic leadership ($r=.73$). Its inclusion led to empirical results which generally said identical things about democratic and progressive leadership. Therefore, progressivism of bishop was dropped from this analysis.

X₂ Clergy Autonomy: estimated degree of autonomy enjoyed by diocesan priests.

X₃ Ideological Polarization: a three-item scale, giving an estimated percentage of diocesan clergy who disagreed with the bishop by thinking more progressively. The issues concerned the importance of guarding doctrine, enlarging church membership, and supporting humanitarian concerns. Reliability (Ω) was .84; validity (P_{TS}) was .92.

X₄ Cross-Status Friendships: a three-item scale, giving estimated degree of communication and friendship between pastors and head bishop, between assistant pastors and bishop, and between diocesan administrators and the rest of diocesan

clergy. Reliability (Ω) was .88; validity (P_{TS}) was .94.

X₅ Negative Sanctions: estimated frequency by which the bishop punished his diocesan priests by undesirable transfers, calling on carpet, and so forth.

X₆ Priest Protest: estimated degree of dissent or opposition expressed by diocesan priests in reference to their chief bishop.

X₇ Dissident Solidarity: estimated degree of camaraderie among diocesan priests who dissented with the chief bishop.

X₈ Clergy Passivity: estimated percentage of diocesan clergy who were passive because disillusioned about the possibilities for a happy and effective ministry within the diocese.

X₉ Priest Resignations: percentage of diocesan clergy who resigned the ministry—calculated by averaging the number of priests in a particular diocese who, as recalled by informants, had resigned in the previous five years, and dividing by the total number of diocesan priests in that diocese for 1966.

REFERENCES

- Althaus, Robert P.
1971 "Multicollinearity and non-additive regression models." Pp. 453-72 in H. M. Blalock (ed.), *Causal Models in the Social Sciences*. Chicago: Aldine-Atherton.
- Blalock, Hubert M.
1969 "Comment on Coleman's paper." Pp. 115-21 in Robert Bierstedt (ed.), *A Design for Sociology: Scope, Objectives, and Methods*. Philadelphia: American Academy of Political and Social Science.
- Christ, Carl F.
1966 *Econometric Models and Methods*. New York: Wiley.
- Cyrns, Arthur G.
1970 "Dogmatism of the Catholic clergy and ex-clergy: a study of ministerial role perseverance and open-mindedness." *Journal for the Scientific Study of Religion* 9:239-43.
- Davis, Charles
1967 *A Question of Conscience*. New York: Harper and Row.
- Dulles, Avery
1974 *Models of the Church*. Garden City: Doubleday.
- Etzioni, Amitai
1961 *A Comparative Analysis of Complex Organizations*. New York: Free Press.
- Fichter, Joseph H.
1968 *America's Forgotten Priests: What They Are Saying*. New York: Harper and Row.
- 1974 *Organization Man in the Church*. Cambridge, Ma.: Schenkman.
- Goldner, Fred H., R. Richard Ritti, and Thomas P. Ference
1977 "The production of cynical knowledge in organizations." *American Sociological Review* 42:539-51.
- Greeley, Andrew M.
1977 *The American Catholic: A Social Portrait*. New York: Basic Books.

- Greeley, Andrew M., William C. McCready, and Kathleen McCourt
1976 *Catholic Schools in a Declining Church*. Kansas City: Sheed and Ward.
- Hall, Douglas T. and Benjamin Schneider
1973 *Organizational Climates and Careers: The Work Lives of Priests*. New York: Seminar Press.
- Heise, David R. and George W. Bohrnstedt
1970 "Validity, invalidity, and reliability." Pp. 104-29 in Edgar F. Borgatta and George W. Bohrnstedt (eds.), *Sociological Methodology* 1970. San Francisco: Jossey-Bass.
- Hirschman, Albert O.
1970 *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Cambridge, Ma.: Harvard University Press.
- Kerlinger, Fred N.
1965 *Foundations of Behavioral Research: Educational and Psychological Inquiry*. New York: Holt, Rinehart and Winston.
- Küng, Hans
1976 *On Being a Christian*. Trans. by Edward Quinn. Garden City: Doubleday.
- Luzbetak, Louis J.
1967 *Clergy Distribution U.S.A.* Washington, D.C.: Center for Applied Research in the Apostolate.
- McCloy, Robert
1978 "Priest crisis not coming; it's here." *National Catholic Reporter* 14 (May 5): 1, 4-5, 20.
- Namboodiri, N. Krishnan, Lewis F. Carter, and Hubert M. Blalock, Jr.
1975 *Applied Multivariate Analysis and Experimental Designs*. New York: McGraw-Hill.
- National Opinion Research Center
1972 *The Catholic Priest in the United States: Sociological Investigations*. (Andrew M. Greeley and Richard A. Schoenherr, coinvestigators.) Washington, D.C.: U.S. Catholic Conference.
- Price, James L.
1977 *The Study of Turnover*. Ames: Iowa University Press.
- Roof, Wade Clark and Christopher Kirk Hadaway
1977 "Shifts in religious preference—the mid seventies." *Journal for the Scientific Study of Religion* 16:409-12.
- Schallert, Eugene J. and Jacqueline M. Kelley
1970 "Some factors associated with voluntary withdrawal from the Catholic priesthood." *Lumen Vitae* 25:425-60.
- Schoenherr, Richard A. and Andrew M. Greeley
1974 "Role commitment processes and the American Catholic priesthood." *American Sociological Review* 39:407-26.
- Schoenherr, Richard and Annemette Sørensen
1975 "Organization structure and changing size in U.S. Catholic dioceses." Paper presented at the annual meeting of the American Sociological Association, New York.
- Seidler, John
1972 *Rebellion and Retreatism among the American Catholic Clergy*. Ph.D. Dissertation, Department of Sociology, University of North Carolina, Chapel Hill.
- 1974a "Priest protest in the human Catholic church." *National Catholic Reporter* 10 (May 3): 7, 14.
- 1974b "Priest resignations, relocations, and passivity." *National Catholic Reporter* 10 (May 10): 7, 14.
- 1974c "On using informants: a technique for collecting quantitative data and controlling measurement error in organization analysis." *American Sociological Review* 39:816-31.



EARLY CHILDBEARING AND LATER ECONOMIC WELL-BEING*

SANDRA L. HOFFERTH

KRISTIN A. MOORE

The Urban Institute

American Sociological Review 1979, Vol. 44 (October):784-815

Early childbearing has been assumed to result in numerous social and economic problems, including school drop-out, large families, and poverty. However, few studies have been conducted within a multivariate, nonrecursive framework, and researchers have not traced the causal and cumulative effects of an early first birth. Using data from the National Longitudinal Surveys of young women on a subsample of women who have borne a child by age 27, we find strong direct effects within a path analytic framework, such that later childbearers complete more education, have smaller families, and work fewer hours at age 27. The relationship with education is recursive among women having a first child by age 18, but simultaneous among later childbearers. Effects of age at first birth on economic well-being at 27 are indirect. Lower education is related to reduced earnings among women and among other household members (usually the husband). Since resources must be divided among more family members, the incidence of poverty is greater. For women who are at least 19 when they have their first birth, the timing of that birth is important to later well-being primarily because of the smaller families and increased work experience of those who postpone their first birth into the twenties. Having an early first birth was found to be less detrimental to the later economic well-being of black women than white women.

The widespread conviction that early childbearing precipitates numerous social and economic problems is founded on surprisingly little evidence. Many associations between teenage pregnancy and lower social and economic attainment have been reported, but the causal role of the occurrence of an early birth has not been established. Researchers have tended to study small groups of girls, typically at only one point in time, and without controlling for important background variables that might affect later status at-

tainment. The possibility that young women who bear children at an early age differ from their childless age peers in numerous ways is often ignored or only mentioned in passing. Therefore, it is not clear whether it is really the early birth or some other antecedent factor that accounts for the social and economic difficulties so often noted among teenage mothers. Furthermore, we lack understanding of the process by which early childbearing might affect attainment. If early childbearing is found to be associated with lower social and economic status after important social, demographic, and motivational variables are controlled, it is necessary to discover the process by which an early birth exerts such a negative impact.

Some of the more sensitive studies that have been done have made it clear that the process is not simple or easy to untangle. For example, Furstenberg (1976) studying a group of teenage mothers over a period of five years, compared them with their high school classmates, some of whom also became premaritally pregnant, some of whom did not, but most of whom are black and relatively disadvantaged. He reports that

their life situations some five years after the birth of their first child reflect a broad range

* Direct all communications to: Sandra L. Hoffert; The Urban Institute; 2100 M St., N.W.; Washington, D.C. 20037.

This project was supported by federal funds from the Center for Population Research, Department of Health, Education, and Welfare under contract number NO1-HD-62829. The contents of this publication do not necessarily reflect the views or policies of the Department of Health, Education, and Welfare. Opinions expressed are those of the authors and do not necessarily represent the views of The Urban Institute or its sponsors. The authors have contributed equally to this research. Helpful comments from Linda Waite, David Heise, Larry Bumpass, Kris Luker, and several anonymous reviewers are gratefully acknowledged. Thanks also are due to Russell Jones for his computer work, to Bonnie Trumbule for preparation of tables and figures, to Carolyn Taylor for her research assistance, and to Isabel Sawhill for her contributions to model development.

of advantages and hardships which seem to defy a simple accounting scheme . . . proving how erroneous some of our impressions of early parenthood have been; in particular, the notion that bearing an unplanned child in adolescence leads inevitably to a life of deprivation. (Furstenberg, 1976:xvi)

What, then, is the effect of an early birth—net of social, motivational and demographic factors—on later attainment? Specifically, how do teenage mothers compare at age 27 with young women who postpone their first birth to their early twenties? If they are less well-off, what explanation can researchers provide as to the process? These are the questions addressed in this study of a large, national sample of contemporary young women.

Disadvantages Associated with Early Childbearing

Educators, parents, and policy makers are concerned that premature pregnancy disrupts and accelerates the life course of the adolescent; it preempts the educational, vocational, and social experiences of the teens and early twenties that are so important to later social and economic well-being. As Bacon (1974:333) notes,

any important life event is potentially stress-inducing as one abandons and adopts meaningful social roles. . . . If motherhood occurs very early in life, it is probable that a stress-engendering acceleration of role transitions will lead to . . . social pathologies.

The young mother's first priority must be to secure some means of support for herself and her child, a necessity which could propel her into an unhappy marriage, a low-paying, dead-end job, or onto welfare. Evidence (e.g., Bumpass et al., 1978) also indicates an association between early and rapid subsequent childbearing, suggesting that the young mother may soon find herself with several children to care for. Other evidence suggests that the early childbearer completes considerably less schooling than her later bearing sisters (Furstenberg, 1976; Mott and Shaw, 1978), placing her at a disadvantage on the job market as well as limiting her opportunity for personal and intellectual growth. If she marries, her husband is also likely to be relatively

young and unskilled, so family income is likely to be low (Coombs et al., 1970).

Furthermore, early childbearing pushes a young woman into a role for which she is likely to be only casually prepared. Parenthood is a demanding role even when assumed at an older age (Rossi, 1968). By moving into this role so early, the young woman is immediately set apart from her peers and perhaps estranged from her family as well. Therefore, she may have trouble maintaining a supportive network at a time when her needs for emotional and physical assistance may be especially great.

However, despite the surface plausibility of such arguments, it is also possible that teenagers who bear children differ initially from their later bearing peers; in this case, the occurrence of a birth would only be correlated with later difficulties (or a compounding factor in such difficulties), but not the cause of such problems. Both early pregnancy and eventual poverty might be due instead to lesser motivation, a disadvantaged background, lack of parental encouragement, or to a set of beliefs and values which in themselves lead to lower attainment, regardless of pregnancy.

Are There Possible Advantages to Early Childbearing?

Possible advantages to teenage childbearing should also be considered. Early childbearers may find it possible to "get over with" the childbearing stage and move fairly early into permanent or steady labor force participation, thus contributing to household income and gaining valuable work experience. Young fathers may not obtain as much schooling; but the payoff to a college degree has been questioned of late, given the over-supply of well-educated young workers and the high wages paid in many blue-collar jobs. Among both men and women, work experience has been found to be associated with higher wages (see, for example, Polachek, 1975; Suter and Miller, 1973; Hofferth et al., 1978). Job seniority may reduce the likelihood of unemployment for both men and women. In addition,

working mothers will not be faced with the problems of interrupting work to have a family or of locating child care for preschoolers, as they might if they worked before forming a family; so continuing full-time employment might be more feasible. Finally, although early marriage has been linked to a higher probability of divorce or separation (Bumpass and Sweet, 1972; Norton and Glick, 1976), those couples who remain married may accumulate considerable assets before their peers are even out of school.

Given these possible advantages, it does not seem wise to assume that all of the consequences of early childbearing are negative. Rather, researchers should attempt to sort out positive from negative consequences.

Our research questions are the following:

1. What are the direct and indirect effects, if any, of the age of a woman at first birth on later economic well-being?
2. What are the total effects of the age of a woman at first birth on her economic well-being at age 27?
3. What are the relative sizes of the different indirect effects of an early first birth on later economic well-being? That is, through what intervening variables (e.g., education, family size, labor force participation) does age at first birth have its effects on later well-being?
4. Finally, what are the implications of the empirical results for status attainment researchers and for policy makers?

DATA AND METHODS

The data on which this analysis is based were drawn from the National Longitudinal Surveys of the Labor Market Experiences of Young Women (hereafter referred to as the NLS). The NLS is funded by the U.S. Department of Labor, designed and fielded by the Ohio State University and the U.S. Bureau of the Census. The first wave was fielded in 1968 and sampled 5,159 young women between the ages of 14 and 24. Attempts to reinterview these women were made annually through 1973, with additional, short interviews in 1975 and 1977, plus a complete interview in 1978. Only data through 1975 were

available for the current analysis. Sample retention has been good; by 1975, 82% of the original sample remained intact. Since this survey has been described in detail elsewhere (see Parnes et al., 1971), we will not discuss it further.

Because of the youth and currency of this sample, it is especially relevant for the study of adolescent childbearing in recent cohorts. The longitudinal design allows us to compare women at similar ages without having to depend on retrospective reports, which can be affected by forgetting or selective recall. Furthermore, the data provide information that is both contemporary and rich. Finally, the large sample size provides a sufficiently large pool of individuals for the kind of analysis our hypotheses necessitate.

The design of the NLS has disadvantages as well, since it limits the range of ages of the women sampled, the oldest of whom were only 31 in 1975. Because we wish to examine the effects of early childbearing among a group of women who are all the same age, and whose economic situation is relatively stable, we selected a subsample of young women who turned 27 during the years of the survey, i.e., who were 20 to 24 in 1968, and who had ever had a child.¹ Early childbearers are included in this sample; however, the very late childbearers (beyond age 27) are excluded. Therefore, while we can assess the consequences of early childbearing, we cannot as confidently generalize to late childbearing, since the latest childbearers are not in the sample. To the extent that this latter group differs greatly from the average childbearer, our results are biased. However, the proportion of the sample who had not borne a child was relatively small. Of those 1,791 women who reached 27 during the survey, 87% (1,562 women) had had children.

Missing data present researchers using the NLS with serious problems. Because our interest lay in the relationship be-

¹ Although age 27 is still relatively young, most of these women should be substantially settled. This is not a group of students: 27% had had some college, only 13% had finished, 3% had gone on past college, and 3% were enrolled in school at age 27.

tween a first birth and later economic well-being, those cases in which data were missing on family income when the respondent was 27, the primary component in determining whether or not a family was poor, were discarded.² This group includes nonrespondents as well as respondents for whom data were missing. As a result, 294 cases were eliminated. The remaining 1,268 young women constituted our sample.

Variable definitions, means, and standard deviations are reported in Tables 1 and 2. Variables on which large numbers of cases had missing information were dropped from the analysis. For the remaining variables, means were substituted when information was missing. The proportion of cases for any variable on which substitution was used averaged less than 1%; data were assumed to be missing at random (see Marini, 1979, for a discussion of problems caused by missing data in panel studies and various strategies to deal with such problems).

A second problem was that of young women who had never married. Since we wanted to avoid discarding the never-marrieds, it was necessary to assign an age at first marriage. The 2% who had not married were assigned their age in 1975 (latest year of the survey) plus one year. Prior to recoding, a dummy variable indicating marital status (never-married vs. ever-married) was created, so this information was not lost.

An additional problem is that the NLS data do not contain a childbearing history for the respondent. Consequently, a measure of age at initiation of childbearing created by the NLS staff from the record of persons living in the respondent's household at the time of each survey was used. This means that adopted children cannot be distinguished from the woman's own children. However, research by Bonham (1977) indicates that only 0.5% of all ever-married women under 30 have adopted a child, making this a trivial source of error. Of greater concern is the

lack of information on abortions, stillbirths, and children given up for adoption. This information is, of course, extremely difficult to obtain, and the accuracy of the data is always in some doubt. Moreover, we believe that it is the presence of a child in the home that has such important consequences for the social and economic status of the parents. Therefore, it is actually the age at initiation of childbearing and rearing and its outcomes on which we focus. To explore these outcomes, we developed a non-recursive model of factors resulting from early childbearing using path analytic procedures.

THE MODEL

The dependent variables of primary interest are three: the *respondent's income* at age 27, the *incomes of other family members* (her husband or other family members), and whether or not the respondent's household falls below the *poverty line*, as measured by the Orshansky index.³ These components of household income were chosen as our measures of well-being not only because income affects the food, housing, leisure, medical care, and social status of all household members, but also because poverty places a burden on society as a whole when welfare support is necessary. In addition, household income provides a straightforward and clear-cut measure of well-being.

The factors that we hypothesize to affect the components of household income

³ Poverty is a dichotomous variable coded one if: the household contains one member and income falls at or below \$2,901, the household contains two members and income falls at or below \$3,633, the household contains three members and income falls at or below \$4,319, the household contains four members and income falls at or below \$5,501, the household contains five members and income falls at or below \$6,501, the household contains six members and income falls at or below \$7,319, the household contains seven members and income falls at or below \$9,035; otherwise, poverty equals zero. (Figures for the 1975 income year from the U.S. Department of Health, Education and Welfare, 1976a.)

² Information on household size, the other variable used to determine poverty status, was obtained from the household record; therefore, no data were missing.

Table 1. Definitions, Means, and Standard Deviations of Variables Used in Path Models, Total Sample, Age at First Birth ≤ 18 , and Age at First Birth > 18 ^a

Variable	Definitions	Age at First Birth ≤ 18 N=256		Age at First Birth > 18 N=1012		Total Sample N=1268	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Age at First Birth	Respondent's Age at the Birth of Her First Child	17.15	1.06	22.42	2.81	21.36	3.32
Education	Years of School Respondent Completed at Age 27	10.54	1.92	12.75	2.00	12.30	2.17
Number of Children	Number of Children Born to or Raised by Respondent by Age 27	2.83	1.16	1.79	.94	2.00	1.07
Hours Worked Last Year	Total Hours Respondent Worked Last Year	794.	848.	708.	838.	725.	840.
Own Earnings	Respondents' Earnings ^b Last Year	\$2,351.	\$2,988.	\$2,490.	\$3,602.	\$2,462.	\$3,486.
Other Family Income	Total Household Income ^c Minus Respondent's Earnings Last Year	\$9,779.	\$7,147.	\$11,989.	\$7,710.	\$11,543.	\$7,648.
Poverty	Whether or Not the Total Household Income of the Respondent Falls at or below the Level Considered Adequate Size by the Department of Health, Education and Welfare for Her Household (U.S. Department of Health, Education and Welfare, 1976)						
Race	Race of Respondent (1=White, 0=Black)	.19	.39	.08	.28	.10	.31
Age in 1968	Respondent's Age in 1968 in Years	.77	.42	.92	.27	.89	.31
Parental Socioeconomic Status	An Index Composed of Three Variables—Occupation of Head of Household When Respondent Was 14, Mother's Education, and Father's Education—Standardized to Have a Mean of 10 and a Standard Deviation of 3. $\alpha = .774$	22.25	1.44	22.07	1.46	22.11	1.46
Age at First Marriage	Respondent's Age at First Marriage (Never Married Respondents Were Assigned an Age at Marriage Which Equaled Their Ages in 1975 Plus One Year)	9.31	2.11	10.51	2.20	10.27	2.23
Number of Siblings	Number of Respondent's Brothers and Sisters	17.46	2.47	20.28	2.32	19.72	2.61
Farm Background	Respondent Lived on a Farm at Age 14 (1=Yes)	3.69	2.44	2.86	2.27	3.03	2.33
Timing of First Birth: Premarital	Timing of Respondent's Birth Relative to First Marriage (1=Premarital)	.14	.35	.14	.35	.14	.35
		.17	.38	.04	.19	.07	.25

Table 1. Continued

Variable	Definitions	Age at First Birth ≤ 18 N=256		Age at First Birth > 18 N=1012		Total Sample N=1268	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Currently Married	Respondent Is Currently Married and Living With Her Husband, but Not Necessarily in a First Marriage (1=Yes)						
Southern Residence	Respondent Lives in the South at Age 27 (1=Yes)	.83	.38	.91	.29	.89	.31
Child Under Six	Respondent has a Child under 6 at Age 27 (1=Yes)	.47	.50	.31	.46	.34	.47
Intact Family of Origin	Respondent Lived with Both Natural Parents at Age 14 (1=Yes)	.63	.48	.86	.34	.82	.38
Home-School Environment	An Index Composed of High School Curriculum (1=College Preparatory), Presence of Three Types of Reading Material in the Home (Score 0 to 3), Parents' Educational Goal for the Respondent (1=More than High School) and Parent-Teacher Help and Encouragement to Continue Past High School (Score 1 [None] to 9 [a great deal]). Standardized to Have a Mean of 10 and a Standard Deviation of 3. $\alpha = .704$	.68	.47	.86	.34	.83	.38
Enrolled at 27	Respondent Is Enrolled in School at Age 27 (1=Yes)	8.37	2.01	9.86	2.27	9.56	2.3
Never Married	Respondent Has Never Been Married (1=Yes)	.02	.13	.03	.18	.03	.17
Work Experience	Proportion of the Last Four Years before Turning 27 in Which the Respondent Worked at Least Six Months	.03	.17	.02	.14	.02	.15
Mother Employed	Respondent's Mother Was Employed Outside the Home When Respondent was 14 (1=Yes)	.40	.37	.43	.37	.42	.37
Household Size	Total Number of Persons in Respondent's Household at Age 27	.38	.44	.35	.46	.35	.45
Physical Limitations	Respondent Has a Physical Problem Limiting Her Activity (1=Yes)	4.86	1.40	3.80	1.07	4.02	1.22
		.13	.34	.07	.25	.08	.27

^a This table and all analyses are based on data which have been weighted to correct for the oversampling of blacks.

^b Wages and salary.

^c Business, interest, dividends, unemployment compensation, wages and salary, other.

Table 2. Definitions, Means, and Standard Deviations of Variables Used in Path Models, Whites and Blacks*

Variable	Definitions	Whites N=1130		Blacks N=138	
		Mean	Standard Deviation	Mean	Standard Deviation
Age at First Birth	Respondent's Age at the Birth of Her First Child	21.58	3.29	19.57	3.02
Education	Years of School Respondent Completed at Age 27	12.42	2.12	11.34	2.33
Number of Children	Number of Children Born to or Raised by Respondent by Age 27	1.93	.99	2.53	1.45
Hours Worked Last Year	Total Hours Respondent Worked Last Year	691.	828.	1,010.	890.
Own Earnings	Respondents' Earnings ^a Last Year	\$2,391.	\$3,490.	\$3,042.	\$3,413.
Other Family Income	Total Household Income ^c Minus Respondent's Earnings Last Year	\$12,135.	\$7,669.	\$6,689.	\$5,453.
Poverty	Whether or Not the Total Household Income of the Respondent Falls At or Below the Level Considered Adequate Size by the Department of Health, Education and Welfare for Her Household (U.S. Department of Health, Education and Welfare, 1976)				
Race	Race of Respondent (1=White, 0=Black)	.08	.27	.30	.46
Age in 1968	Respondent's Age in 1968 in Years	1.	0	0	0
Parental Socioeconomic Status	An Index Composed of Three Variables—Occupation of Head of Household When Respondent Was 14, Mother's Education, and Father's Education—Standardized to have a Median of 10 and a Standard Deviation of 3. $\alpha=.774$	22.11	1.46	22.07	1.38
Age at First Marriage	Respondent's Age at First Marriage (Never Married Respondents were Assigned an Age at Marriage Which Equaled their Ages in 1975 Plus One Year)	10.46	2.17	8.63	2.08
Number of Siblings	Number of Respondent's Brothers and Sisters	19.61	2.41	20.58	3.74
Farm Background	Respondent Lived on a Farm at Age 14	2.82	2.15	4.76	2.96
Timing of First Birth:	Timing of Respondent's Birth Relative to First Marriage (1=Premarital)	.14	.34	.19	.39
Premarital or Ambiguous	Respondent Is Currently Married and Living with Her Husband, but Not Necessarily in a First Marriage (1=Yes)	.03	.18	.34	.47
Currently Married	Respondent Lives in the South at Age 27 (1=Yes)	.92	.28	.67	.47
Southern Residence	Respondent has a Child Under 6 at Age 27 (1=Yes)	.31	.46	.63	.48
Child Under Six	Respondent Lived with Both Natural Parents at Age 14 (1=Yes)	.83	.38	.74	.44
Intact Family of Origin		.85	.36	.62	.49

Table 2. Continued

Variable	Definitions	Whites N=1130		Blacks N=138	
		Mean	Standard Deviation	Mean	Standard Deviation
Home-School Environment	An Index Composed of High School Curriculum (1=College Preparatory), Presence of 3 Types of Reading Material in the Home (Score 0 to 3), Parents' Educational Goal for the Respondent (1=More Than High School) and Parent-Teacher Help and Encouragement to Continue Past High School (Score 1 [None] to 9 [a Great Deal]). Standardized to have a Mean of 10 and a Standard Deviation of 3. $\alpha = .704$.				
Enrolled at 27	Respondent Is Enrolled in School at Age 27 (1=Yes)	9.69	2.29	8.46	2.08
Never Married	Respondent Has Never Been Married (1=Yes)	.03	.17	.04	.21
Work Experience	Proportion of the Last Four Years before Turning 27 in Which the Respondent Worked At Least Six Months	.01	.12	.10	.30
Mother Employed	Respondent's Mother Was Employed Outside the Home When Respondent was 14 (1=Yes)	.41	.37	.49	.38
Household Size	Total Number of Persons in Respondent's Household at Age 27.	.34	.45	.51	.44
Physical Limitations	Respondent Has a Physical Problem Limiting Her Activity (1=Yes)	3.94	1.10	4.65	1.81
		.08	.27	.09	.29

* This table and all analyses are based on data which have been weighted to correct for the oversampling of blacks.

^b Wages and salary.

^c Business, interest, dividends, unemployment compensation, wages and salary, other.



and poverty, their causal direction, and their temporal order, are diagrammed in Figure 1. Although not drawn in the diagram, the model is hierarchical in that all earlier variables are hypothesized to affect all later variables, with two exceptions: (1) the relationship between age at first birth and education is hypothesized as reciprocal, nonrecursive, and (2) other family income and work experience are assumed to be entered at the same level. That is, neither affects the other, though each affects all later variables.

A number of exogenous variables were available as controls for initial differences and for social, motivational, and demographic influences on endogenous variables in the model. The most important of these are *parental socioeconomic level* and *race*, which have been consistently shown to play important roles in determining later socioeconomic attainment (see, for example, Blau and Duncan, 1967; Duncan et al., 1972; Sewell and Shah, 1967; 1968; Featherman and Hauser, 1976; Treiman and Hauser, 1975) and, we hypothesize, will also be important in determining age at first birth. (Race is included additively in the total sample of respondents; however, the samples are also subdivided by race and the relationship of age at first birth and later economic well-being is explored separately among blacks and whites; see discussion below.)

Although in this analysis we are looking at the economic well-being of all respondents at age 27, these women were different ages (20 to 24) in 1968, the first year of the survey and, therefore, of different birth cohorts. The *birth cohort* of a woman is an important correlate of fertility (Glick and Norton, 1977) and employment status (Farkas, 1977), and, therefore, we hypothesize, her economic well-being at age 27. Recent birth cohorts have been postponing both marriage and childbearing, which may lead to differences among women even over the small range of cohorts included in this analysis. Age in 1968 serves as a proxy for the birth cohort of a woman: the younger the woman in 1968, the more recent the birth cohort.

Because of the importance of parental socioeconomic level, race, and cohort,

these variables are included in each structural equation. A number of other exogenous variables were included in the analysis; they are discussed along with the appropriate endogenous variable. Going from right to left in Figure 1 we can now explicate the path model.

The *poverty status* of the woman's household at 27 is the only completely endogenous variable in the model. Whether or not a household is poor is by definition determined by its income and by the number of people dependent upon that income; therefore, no other exogenous variables were included in the structural equation. Household income is represented separately by the income of the woman and by the income of others in the household, while the number of children (not identical to household size, but correlated at the .90 level) represents the burden of dependency in these families. Since the husband earns most of the income in the vast majority of American households (Glick and Norton, 1977), this variable is expected to be the primary determinant of poverty.

The *woman's own income* is a function of the number of hours that she works and her hourly earnings.⁴ However, in the NLS, hourly wages were measured at the date of the survey, when only 38% of the women were employed (whereas 65% had worked some hours in the previous year and, therefore, reported some income during that period). Similarly, a substantial amount of information was missing on the respondent's current or last job. Therefore, neither predictor was included. Instead, we have a measure of work experience, and, of course, education; both of these represent the human capital a respondent may have accumulated. The income of other household members is also hypothesized to affect the woman's income. Those who have no other source of income will have a greater need to maximize their own earnings (see Hudis, 1976).

Other exogenous factors that may affect a woman's earnings reflect her own per-

⁴ Women who did not work any hours at all during the last year and women with no incomes over that period are included in the analysis.

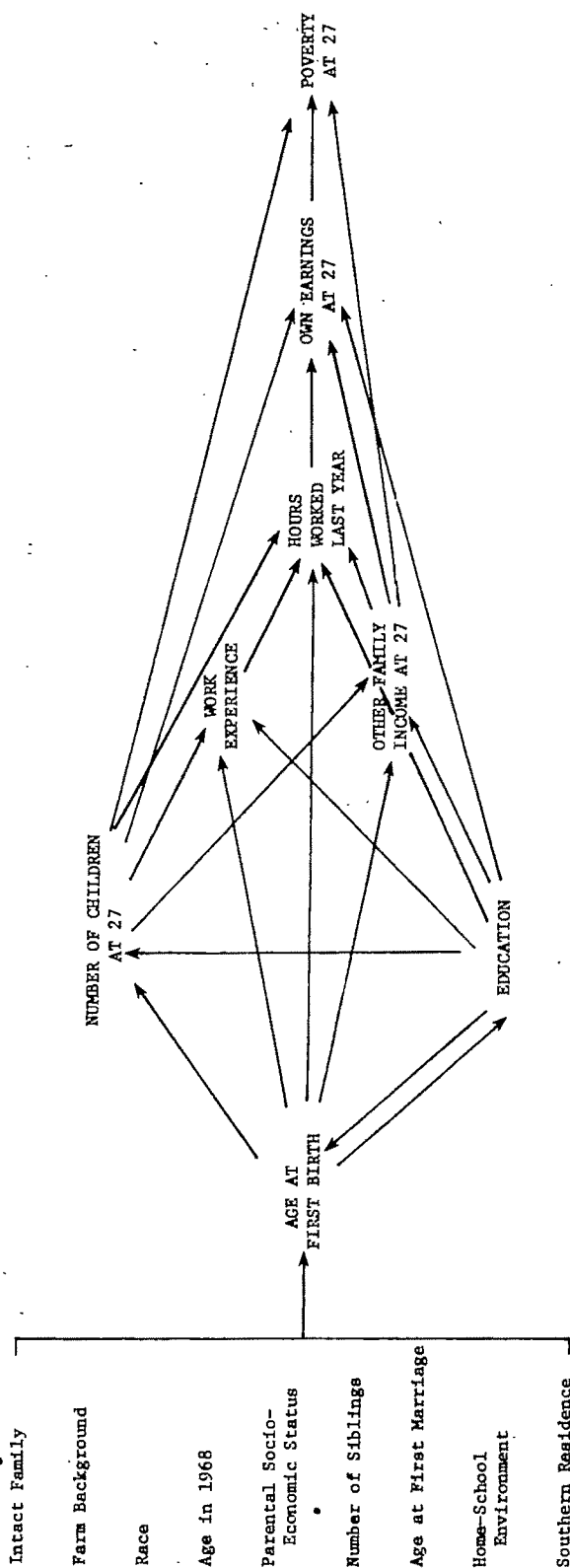


Figure 1: Schematic Diagram of the Effects of Age at First Birth on Socioeconomic Well-Being

sonal situation. Women who have young children (under six), who are enrolled in school, or who have a physical limitation of some sort, are likely, if employed, to earn less, trading off earnings for other factors such as convenience of hours, accessibility to work, and so on (see Darian, 1975; Hudis, 1976). We also have controlled for the residence of the respondent, in the South or in a metropolitan area, to reduce any differential in earnings due to differences in living costs. In addition to size of other family income we have controlled for the respondent's marital status. Although the two are strongly associated, their net effects may differ.

The primary component of *other family income* is the income of the husband, though other relatives may contribute, especially if the woman is not married. Determinants of the income of other adults in the household that are of interest in this analysis include a woman's age at first birth and her educational attainment and family size. Our expectation is that the early childbearers and women who themselves complete less education are likely to find their marriage prospects limited to men of lower earning ability. Other exogenous factors for which we have controlled in our analysis include southern residence and metropolitan residence, again, to limit cost of living differences. Finally, since larger households are likely to have more earners, we have controlled for the number of household members. Very little is known about the characteristics, such as education or occupation, of husbands or other household members; the residual for this variable is expected to be large as a result.

A woman's labor force participation (whether or not she works) has been found to be a function of her husband's income (see, for example, Bowen and Finnegan, 1969; Darian, 1975), her own education (Treiman and Terrell, 1975; Featherman and Hauser, 1976; McClendon, 1976), and the number and ages of her own children (Treiman and Terrell, 1975; Hudis, 1976; Sweet, 1968; Mason, 1974). Although the effects of each of these on hours may not be identical to their effects on participation,⁵ we have hypothesized that the

hours she worked last year are also a function of the income of others, her schooling, and her family size. Whether a woman works or not, and the hours she works, are probably also a function of her previously built-up human capital. Besides education, past work experience serves as a reasonable proxy for human capital. Researchers have found previous work experience to be among the best predictors of the current labor force participation of women (Heckman, 1978; Hofferth et al., 1978).

Age at first birth should affect *work experience*;⁶ however, the direction of the effect is not clear. Those women who postpone a birth may work in the meantime. On the other hand, early childbearers may be forced into the labor force sooner out of economic necessity. In earlier research we failed to find a strong direct effect of an early birth on work experience (see Hofferth et al., 1978); however, the women were of widely different ages and life cycle stages. Besides age at first birth, education and family size, as well as parental socioeconomic background, race, age in 1968, and age at marriage, background factors such as whether or not a girl was raised on a farm and whether or not her mother was employed when she was growing up may affect the work experience she accumulates (Cain, 1978). Finally, those who have never been married accumulate more work experience than those who have been married (Polachek, 1975).

Number of children has been found to be a function of education (Michael, 1974; Janowitz, 1976; U.S. Bureau of the Census, 1976a), age at first birth (Bumpass et al., 1978; Bonham and Placek, 1975; Presser, 1971; Furstenberg, 1976), number of siblings (Johnson and Stokes, 1976), and timing of the first birth with respect to marriage (Bumpass et al., 1978), as well as race, parental socioeconomic status, and birth cohort (U.S. Bureau of the Census, 1976b; Ryder and Westoff, 1971; Westoff

be working in any given year; however, they work fewer hours than do women not currently married (Hofferth et al., 1978).

⁶ The work experience measure used in this analysis is defined as the proportion of the last four years (before age 27) in which the respondent worked at least six months.

⁵ For example, married women are more likely to

et al., 1961; U.S. Department of Health, Education, and Welfare, 1976b). Although there is some evidence of a simultaneous relationship between labor force participation and fertility over the life cycle (see, for example, Waite and Stoltzenberg, 1976; Weller, 1977; Smith-Lovin and Tickamyer, 1978), we have assumed that, in our sample, number of children affects current hours worked, rather than vice versa, since all of these women have had a first birth prior to the year in which current participation is measured (age 27). The relationship of family size and prior work experience is more likely to be simultaneous; however, we do not have enough information to disentangle these effects.

A Nonrecursive Link between Education and Age at First Birth

Over half of the young women interviewed by the NLS research staff cited their marriage or pregnancy as the reason that they quit school. Since Mott and Shaw (1978) were able to return to the actual NLS interview schedules to develop codes for the month as well as the year of particular events, they were able to graph the parent status of young women relative to the month that they terminated schooling. Their data reveal that about 5% of the white high school drop-outs are already mothers when they leave school, as are about 20% of the blacks. By nine months after leaving school, nearly a quarter of the white high school drop-outs have become mothers, while 45% of the black high school drop-outs have. Looking at it from the perspective of the pregnant student, Mott and Shaw report that at the time of birth, fewer than 25% of blacks and 10% of whites are still enrolled in school. Clearly, pregnancy and childbirth affect school enrollment; however, it is also clear that there are other factors leading to school drop-out.

Cutright (1973) and others have suggested that it is a lack of motivation that causes both dropping out of school and early childbearing. According to this interpretation, we should find no relationship between pregnancy and school drop-out once motivation is controlled. An index consisting of measures of edu-

cational goals, parent-teacher help and encouragement to continue past high school, and the availability of reading matter in the home was developed as an indicator of motivation. We do not find, however, that the relationship between age at first birth and educational attainment disappears when this indicator of motivation is included in a regression. The relationship between early childbearing and schooling does not appear to be spurious. However, the relationship is very likely to be simultaneous. One might expect that a first birth to a teenager frequently precipitates the termination of schooling. It is also likely, though, that the longer a woman attends school, the longer she puts off marriage and childbearing. In this sense, educational attainment can be said to delay the first birth. This suggests that causality operates in both directions, though the particular direction that predominates depends on the sample.

Cross-tabulations of age at first birth with age at termination of schooling indicate that only among childbearers age 18 and under does either pregnancy or childbearing precede school drop-out in a substantial number of cases. Of those young women who have a first birth while 16 to 18, for example, 70% drop out of school within a year of birth (either one year before, in the same year, or in the following year). Of those who have a first birth between 19 and 21, only 25% finish schooling within one year of the birth. Most women who are 19 or older when they have their first birth have terminated their schooling before the birth. Given the importance of a high school diploma on the job market, the effect of terminating schooling on later life chances should be much greater if that termination occurs before high school graduation.

Thus, although we predict a simultaneous relationship between education and the age at which a woman bears her first child in the full sample, we expect the effect of age at first birth on education to predominate among those who bear their first at 18 and under. Among those who bear their first child at age 19 or older, we expect the effect of education on age at first birth to dominate. To test these expectations, we have specified simultaneous causality between age at first birth

and educational attainment at 27 not only for the total sample, but also for two subsamples: (1) women 18 or younger at the time of their first birth, and (2) women 19 or older at first birth.

Age at First Marriage and Age at First Birth

Marriage is a critical life cycle transition (Marini, 1978). An association between age at marriage and fertility has been documented repeatedly (Bumpass, 1969, for example). In addition, it has been shown that the age at which a woman first marries has a strong effect on the probability that she will later divorce or separate from her husband (Moore et al., 1978b). Yet in a society in which a substantial proportion of young married couples are contracepting, one can also argue that it is a birth, not a marriage, that drastically alters many aspects of a woman's life. This is especially likely to be the case for the earliest childbearers.

In general, women marry and then at some later point become pregnant and bear a child. That is, a marriage precedes childbearing in the majority of cases, and is the factor precipitating pregnancy. For example, in the NLS fewer than 7% of all women were found to have given birth premaritally. However, for many of the young women who bore first children while teenagers, the causal sequence may be reversed. For example, 17% of first births which occurred before a woman's nineteenth birthday were premarital, compared with only 4% of first births to women age 19 or older. Analyses of annual transitions to marriage indicated that if a birth occurred during a year to a young woman who was unmarried at the start of the year, the probability of marriage in that year was also dramatically increased (Moore et al., 1978b). Thus, a marriage, rather than being a cause of a birth, may be an outcome for the earliest childbearers. Of course, as suggested in the discussion of education and age at first birth, marriage as well as childbearing may be the result of some other, unknown factor, such as boredom with school. Unfortunately, in the NLS, data on marriage are not detailed enough to enable more pre-

cise comparisons of the timing of births, marriage, and school drop-out.

A model specifying simultaneous causation among schooling, age at first birth, and age at marriage is probably the best for the early childbearers (see, for example, Moore and Hofferth, forthcoming). Unfortunately, in this sample there are not enough exogenous variables associated with age at first birth and age at first marriage to statistically disentangle their relationship. However, leaving age at marriage out of the model in the analysis of young women whose first birth occurred before they were 19 significantly reduces its predictive power. Therefore, in the total sample and in the subsamples, age at first marriage was included as a control variable in the analysis of age at first birth.

Because we are interested in the effects of age at first birth, not age at first marriage, we also controlled for age at first marriage in each structural equation (except that of poverty). All effects of age at first birth are, therefore, net of age at first marriage. The high correlation between the two variables⁷ increases the error in the estimates of their separate effects; however, only among whites does their association rise above 0.70, the level at which bias appears most serious (see, for example, Hanushek and Jackson, 1977).

Age at First Birth and Later Economic Well-Being: Blacks and Whites

The literature on socioeconomic attainments of men and women demonstrates major differences in the attainment processes of blacks and whites (see, for example, Porter, 1974; Portes and Wilson, 1976; Hudis, 1977). Race cannot be justifiably included as an additive variable without dealing with the many race interactions. This is even more pertinent when considering the fertility related sources of differential attainments. For example, marriage is less likely to follow an out-of-wedlock conception of a young black woman than of a white woman. The

⁷ Age at marriage and age at first birth are correlated .654 in the total sample, .091 in the sample of early childbearers (≤ 18), .618 in the sample of older childbearers (> 18), .332 among blacks, and .770 among whites.

sources of other family income should also differ substantially for the two racial groups, with blacks more likely to receive support from public assistance and from household members who are not husbands (Hoffman, 1977). This should affect the relative importance of the two income sources and family size for poverty status. For these and other reasons we have estimated separately models of the relationship of age at first birth and later economic well-being for blacks and whites. Because of the small sample sizes we have not, in addition, divided the samples of black and white women by their age at first birth (≤ 18 , > 18).

RESULTS

As noted above, separate analyses were conducted on the total sample and several subsamples: (1) respondents who were 18 or younger when they had their first birth, (2) respondents who were 19 or older at first birth, (3) black women, and (4) white women.

There is evidence that the earliest childbearers do differ from later childbearers in a number of important ways. From the means (Tables 1 and 2) we see that parental families of early childbearers were lower on the socioeconomic scale, larger, and more likely to have been broken or to be black. Early childbearers were less likely than were later childbearers to have experienced an environment supportive and encouraging of furthering their schooling past high school. In addition, their first births were more likely to have been premarital. Thus it is not surprising that early childbearers have completed less schooling, have larger families, and are more likely to be poor at 27. Though there is little difference in their work experience, hours of work, or earnings, at 27 early childbearers are more likely to be living in the South, to be in large households, and to have physical problems limiting their activity. They are less likely to have a child under six. Net of the substantial initial differences between these two groups, does age at first birth continue to have an impact either directly or indirectly on later economic well-being? The results of the multivariate

analyses are presented in Tables 3 through 7.

Estimation of the Nonrecursive Link between Education and Age at First Birth

As depicted in the structural equations (Appendix), the number of (unique) exogenous variables left out of the age at first birth and education equations (two) is greater than the number of endogenous variables (two) minus one. Thus the model is over-identified, and two-stage least squares gives consistent unbiased parameter estimates. Because of the attention in economic and sociological literature recently to simultaneity problems (see, for example, Johnston, 1972; Duncan, 1975; Hanushek and Jackson, 1977), we will not discuss the problems of identification and estimation in simultaneous equations in detail.

The top two rows of Tables 3, 4 and 5 present the two-stage least squares (2SLS) estimates of the relationship between education and age at first birth for the total sample, for women whose first child was born when they were 18 or younger, and for those whose first child was born after they turned 19. Results of the models permitting simultaneous causality support the hypothesis that an early birth has a causal impact on schooling among the early childbearers (age at first birth ≤ 18 ; Table 4). Although the standardized coefficient is not large, the effect is substantial in actual years of schooling (metric coefficient). For each year she delays a first birth, a young woman can expect to complete 9/10 of a year of additional schooling. On the other hand, in this subsample there is no evidence that schooling affects age at first childbirth. In other words, the causal direction is from childbearing to schooling. The effect of the age at which a woman has her first birth is strong if she has that first birth while she is yet of high school age, but there is no evidence of reciprocal causation.

Among women who were at least 19 at the time their first child was born (see Table 5), the picture is quite different. In this subsample, the impact of a birth on educational attainment (about 1/5 of a year) is much smaller than it was for the

Table 5. OLS/2SLS Estimation of Each Structural Equation: Age at First Birth Greater Than 18

AFB > 18 Dependent Variable	Household Size	Has a Child Under Six	Enrolled in School	Mother Employed	Has a Physical Limitation	Southern Resident	Metropolitan Resident	Currently Married	Never Married	Timing of First Birth (Premature)	Farm Background	Home-School Environment	Intact Family	Number of Siblings	Age at First Marriage	Parental Socio- economic Status	Race	Age at First Birth	Education	Number of Children	Proportion of Years Worked	Other Family Income	Hours Worked Last Year	Own Earnings	Constant	R ²	F
STANDARDIZED*																											
Age at First Birth																											
Education																											
Number of Children																											
Proportion of Years Worked																											
Other Family Income																											
Hours Worked Last Year																											
Own Earnings																											
Poverty																											
METRIC ^b																											
Age at First Birth																											
Education																											
Number of Children																											
Proportion of Years Worked																											
Other Family Income																											
Hours Worked Last Year																											
Own Earnings																											
Poverty																											

* p < .05.
** p < .01.
*** p < .001.
^b Standard errors in parentheses.

early childbearers, while the impact of schooling on age at first birth becomes significant and large (about 1/3 of a year). Indeed, among mothers at least 19 at their first births, the impact of schooling on age at first birth is about the same size (standardized coefficient) as the impact of a birth on schooling. Both effects are statistically significant; the relationship is reciprocal. This simultaneous effect is also found in the total sample, as would be expected from the predominance of older mothers in the sample as a whole (Table 3).

Thus the crucial causal impact of a birth on educational attainment seems to be concentrated among teenage mothers. This makes some intuitive sense. Among women who become mothers at older ages, more varied and personal factors are likely to affect schooling and the timing of childbearing. Among women who first become mothers during the high school years, however, the fact of that birth seems to intrude upon and supersede other factors that would normally determine educational attainment.

The Education-Age at First Birth Relationship among Blacks and Whites

Since such a sizeable number of black women bear their first children early and out-of-wedlock (U.S. Department of Health, Education, and Welfare, 1979), we would expect substantial differences in the age at first birth-education relationship between blacks and whites. In Tables 6 and 7 (metric coefficients), we can see that the effect of schooling on age at first birth is much stronger for blacks than for whites; whereas, the effect of a first birth on schooling is about the same for whites and blacks. As can be expected given the weaker relationship between birth and marriage among blacks ($r = .332$), the effect of age at first marriage on age at first birth is much weaker among blacks than among whites.

Direct, Indirect and Total Effects of Age at First Birth on Later Well-Being

Because we are only interested in the direct, indirect, and total effects of age at

first birth, not in the total association (due to common causes, correlated causes, and so on; see Alwin and Hauser, 1975), we have first eliminated the loop by semireducing age at first birth and educational attainment on their disturbances (see, for example, Heise, 1975), eliminated the paths due to exogenous variables, and redrawn the model to show only the variables endogenous to age at first birth and their corresponding paths (e.g., Figure 1).⁸ In Tables 3 through 7, the standardized and unstandardized coefficients for all relationships in the model, for each subsample, are presented.⁹ In Tables 8 and 9 we have summarized the path analyses by presenting in dollars the direct, indirect, and total effects of age at first birth on each endogenous variable.¹⁰ We focus here on the effects of age at first birth on the components of household income and on poverty, although the effects on the intervening variables also can be specified.¹¹ These results are calculated and presented separately for the subsamples of women divided by age at first birth and then separately for blacks and whites. Results are also presented for the entire sample in Table 8.

Direct Effects of Age at First Birth

As can be seen in Tables 8 and 9, there is only one statistically significant *direct* effect of an early birth. In the subsample of women who bore their first child at 18 or younger, age at first birth has a negative

⁸ Those variables exogenous to age at first birth drop out in the calculation of indirect effects.

⁹ Because the model does not fit Alwin and Hauser's (1975) paradigm, we have not used their "decomposition of effects" method. We have, instead, obtained the indirect effects by substituting in the structural equations, obtaining the reduced forms, calculating each indirect effect separately, and aggregating the indirect effects of age at first birth through each intervening and all later variables on own income, other family income, and poverty (see Appendix).

¹⁰ All relationships were estimated by ordinary least squares (OLS) except that between education and age at first birth, which was estimated by two-stage least squares (2SLS).

¹¹ In addition, to keep the discussion manageable we will not discuss the effects of the exogenous variables. The interested reader can glean a richer picture from a close examination of Tables 3-7 and Appendix Figures 1 and 2.

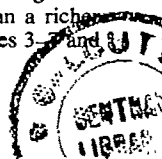


Table 8. Effects of Being One Year Older at First Birth on Measures of Economic Well-Being at 27, by Age at First Birth

Dependent Variable	Total Effect ^b	Age at First Birth ≤ 18 Indirect Effect Through:					Direct Effect
		Education	Number of Children	Work Experience	Hours	Other Family Income	
Own Income ^a	\$276	\$194	\$82	—	—	—	0
Other Family Income ^a	-\$539	\$182	\$243	—	—	—	-\$964
Poverty	-0.1	-0.8	-1.7	—	—	+2.4	—
Dependent Variable	Total Effect ^b	Age at First Birth > 18 and < 27 Indirect Effect Through:					Direct Effect
		Education	Number of Children	Work Experience	Hours	Other Family Income	
Own Income ^a	\$213	\$22	\$158	\$113	-\$80	—	0
Other Family Income ^a	\$530	\$91	\$439	—	—	—	0
Poverty	-2.0	-0.2	-1.8	-0.2	+0.2	—	—
Dependent Variable	Total Effect ^b	Full Sample (Age at First Birth < 27) Indirect Effect Through:					Direct Effect
		Education	Number of Children	Work Experience	Hours	Other Family Income	
Own Income ^a	\$193	\$20	\$170	\$65	-\$62	—	0
Other Family Income ^a	\$477	\$127	\$350	—	—	—	0
Poverty	-2.2	-0.3	-1.9	-0.1	+0.1	—	—

^a 1975 dollars.^b The total effect is the sum of the direct and indirect effects.

impact on other family income. Delaying a first birth by one year reduces other family income at age 27 by \$964 for each such year of delay, perhaps because the very youngest mothers get more help or delay household formation. With this exception, the effects of age at first birth on poverty are indirect, through its impacts on inter-

Table 9. Effects of Being One Year Older at First Birth on Measures of Economic Well-Being at 27, by Race

Dependent Variable	Total Effect ^b	Whites Indirect Effect Through:					Direct Effect
		Education	Number of Children	Work Experience	Hours	Other Family Income	
Own Income ^a	\$192	\$29	\$151	\$78	-\$66	—	0
Other Family Income ^a	\$716	\$131	\$585	—	—	—	0
Poverty	-1.8	-0.2	-1.6	-0.1	+0.1	—	—
Dependent Variable	Total Effect ^b	Blacks Indirect Effect Through:					Direct Effect
		Education	Number of Children	Work Experience	Hours	Other Family Income	
Own Income ^a	-\$53	\$6	\$68	-\$127	—	—	0
Other Family Income ^a	0	0	0	0	0	0	0
Poverty	+0.26	-0.04	-0.3	+0.6	—	—	—

^a 1975 dollars.^b The total effect is the sum of the direct and indirect effects.

vening variables. The large negative effect of a first birth on the incomes of other family members will be discussed further when we discuss the total and indirect effects of a first birth among the early childbearers, as its ramifications upset preconceptions of a simple negative impact of early childbearing on later economic well-being.

The Total and Indirect Effects of Age at First Birth: Total Sample

Effect on own earnings. Postponing a first birth is definitely to a young woman's economic advantage. The total effect of waiting one more year before having a first birth is associated with increased earnings at age 27 of \$193 (Table 8). Thus a young woman who has a first birth at 22, compared with the one who has that birth at 17, can expect to earn almost \$1,000 more annually (in 1975 dollars) at age 27.

The largest of the indirect effects of age at first birth on a woman's earnings operates through *number of children*. Postponing a first birth is associated with reduced family size, which, in turn, is directly associated with increased earnings. It is indirectly associated with increased earnings through increased work experience and hours worked last year. Over half (54%) of the total effect is a result of the various indirect effects of a first birth through family size and later variables.

The next most important variables through which age at first birth exerts its indirect effects on earnings are *work experience* and *hours worked last year*; each accounts for about 20% of the total effect of a first birth on the respondent's earnings. However, the directions of these effects are opposite in sign. Postponing a first birth increases own earnings by \$65 for each year of delay because of the increased work experience and resulting increased hours and earnings such women will obtain. On the other hand, women who postpone a birth appear to have worked fewer hours last year (age 26-27), which reduces their earnings. Since whether or not a woman had a child under six was controlled, the direct effect of a first birth on hours worked last year can-

not be explained by the recency of a birth (recent mothers being more likely to be at home). In addition, the size of other family income is controlled; this effect is therefore not a result of the better economic position of the families of later childbearers. Other work on a different sample of women obtained a similar result (Hofferth and Moore, 1978); thus the finding can only be interpreted as evidence of the current lack of understanding of the factors associated with female labor force participation.

The smallest of the indirect effects of a first birth on a woman's earnings is that through *education* and later variables. It accounts for only 6% of the total effect. This is surprising, since much has been made of the importance of the effect of an early first birth in removing women from school. In fact, among women all ages at first birth, the effect of a first birth through education on later earnings is very small. However, this must be qualified since, as will be shown shortly, for certain groups of women the effects of an early first birth on later well-being through its effects on schooling are considerable.

Effect on other family income. As expected, the total effect on the income of other family members of delaying a first birth for one year is substantial. Each year of delay is associated at age 27 with other family incomes which are higher by \$477 (Table 8). Three-quarters of the effect is due to the *smaller families* such women will have, one-quarter is due to their greater *schooling*. Since we know so little about the husbands or other family members of these respondents, we are unable to explore those factors intervening between the family sizes or schooling of the women and the incomes of their husbands or other family members. However, it has been widely hypothesized that a more highly educated woman has both more opportunity to meet and is more attractive to highly educated men. Whether there is a common antecedent of large families and earnings of husbands or whether there is something about large families that reduces income (such as less geographic mobility), we are unable to sort out with these data.

Effect on poverty. As a result of the

woman's increased earnings and the larger earnings of other family members, as well as their smaller families, we expect that the probability of being poor at age 27 should be reduced among later childbearers. In Table 9, we can see that this is, in fact, the case. The total effect of delaying a first birth for one year decreases by 2.2 percentage points the chance that a young woman will be living at age 27 in a household that is poor. This is a substantial reduction (22%) in the probability of being in poverty, since the overall proportion in poverty in the total sample is only 10%.

Again, as in its effects on earnings and on other family income, most (80%) of the total effect is a result of the *smaller families* that postponers have; 12% is a result of their greater *schooling*, with 8% due to labor force participation. Of the latter, half the effect is positive and half negative. Although postponing a first birth increases a woman's *work experience* and her later earnings, decreasing her chances of being poor, it also decreases her *hours of work* at age 27, reducing her earnings and increasing her chances of being in poverty. These effects are almost equal, cancelling each other out.

Conclusions: total sample. Although age at first birth does not appear to have any direct effects on later earnings, income of other family members, or on poverty, it does have strong indirect effects. Most of these confirm popular beliefs about the negative effects of early childbearing on later economic well-being. However, there is also a positive effect of having a birth while young, which acts to increase work hours. The effect is small relative to the substantial negative effects of early childbearing on later well-being.

Another interesting and important result is that, contrary to many beliefs, the primary impact of having children early is that total family size is increased. The largest of the indirect effects of an early birth on later well-being operates through number of children. Women with larger families obtain less work experience, work fewer hours, and earn less. In addition, the incomes of their husbands or other family members are lower. As a result, they are considerably less well-off at age 27 than their later-bearing sisters. The

indirect impact of an early birth on a woman's own earnings through limiting her schooling is small, while that on the incomes of other family members through schooling, though somewhat larger, is still secondary to that through her own family size.

However, we have hypothesized that a first birth will have its strongest impact on educational attainment and thus indirectly on later well-being primarily among those still in high school at the time of the birth. Thus we have calculated the direct, total and indirect effects of a first birth on later well-being separately among earlier and later childbearers.

The Total and Indirect Effects of Age at First Birth: Age at First Birth Greater Than 18

For the majority of the sample, those who have their first births after age 18, the results are very similar to those for the total sample, as we would expect. The effects are in the same direction, and of the same order of magnitude (see Table 8). The strongest indirect effects operate through family size. The indirect effect of a first birth on own earnings through work experience is somewhat larger in this sample than in the total sample, and the effect through number of children is somewhat smaller. Because of the similarity of the effects and interpretation, we will not discuss this sample in detail.

The Total and Indirect Effects of Age at First Birth: Age at First Birth Less Than or Equal to 18

Effect on own earnings. The total effect of delaying a first birth on the earnings of the youngest childbearers is larger than that among childbearers of all ages. A woman's earnings are larger by \$276 for each year a first birth is delayed (Table 8). In contrast to the results among all childbearers, among the earliest childbearers the indirect effect of an early birth operates primarily through *education*. Because a woman who has a child early finishes fewer years of school, she has more children, obtains less work experience, and marries a man of lower earning power than a woman who delays

that birth one year. Larger family size and less work experience are associated with lower earnings, with lower family incomes, and with poverty. Seventy percent of the total effect of a birth on own earnings operates through education and later variables. Another 30% operates through *number of children*. The very youngest mothers have larger families. As a result they accumulate less work experience, which is associated with working fewer hours, and earning less.

Effect on other family income. A surprisingly large direct negative effect of postponing a first birth on other family income at age 27 was obtained in this sample. Though there are substantial positive effects of delaying a first birth on other family income through increased *education* and through decreased *number of children*, the direct negative effect of a first birth is so large as to make the direction of the total effect negative. As a result, a one-year delay in a first birth is, among the early childbearers, associated with a \$539 reduction in the incomes of other family members (Table 8). Although surprising, analyses on another sample (the Panel Study of Income Dynamics) showed the same negative impact in a comparable subsample of early childbearers (Hofferth and Moore, 1978). Because of lack of information on other family members, we have no way to compare the family situations of early and later childbearers in detail. Other analyses that have been conducted with both the NLS and the PSID, however, shed some light on this relationship. They suggest that the older (of the early) childbearers are more likely than the younger to marry as a result of a pregnancy or a birth (Moore et al., 1978b). Thus, it may be that early childbearers who do not leave their parental home, with its support and help, to start their own families, may therefore be able to avoid many of the negative consequences of early childbearing (see, for example, Furstenberg and Crawford, 1978). The early marriers with children may be hardest hit by the problems of role transition so often cited by writers on this subject. Evidence that it is early marriage rather than an early birth that is associated with later marital dissolution supports

this argument (Moore et al., 1978b). Thus, more important than the fact of an early birth may be whether or not the young woman can draw upon enough social, economic, and emotional support to be able to continue with her life, including finishing school and not immediately risking further pregnancies.

Effect on poverty. As a result of the large direct effect of a birth on other family income, the total effect of delaying a first birth on the chance of being in poverty at age 27 is small (Table 8). Half the indirect effects of delaying a first birth on the probability of poverty are negative—through increased *education* and decreased *family size*, which increase later earnings and decrease the chance of being in poverty at age 27. However, a large indirect effect through other family income acts to increase the probability such a woman will be poor at age 27. The positive and negative effects are comparable in size, thus cancelling each other out.

Conclusions: sample of early childbearers. Although we did find that, among all childbearers, delaying a first birth has substantial positive indirect effects on later well-being through education, family size, and labor force participation, the effects of age at first birth on later economic well-being through educational attainment are not nearly as large or as significant as are the effects through family size. As predicted, only among the earliest childbearers, those who have a first birth before or at 18, are there large indirect positive effects of delaying a first birth on later earnings through education. However, among these young mothers, the very earliest childbearers (those who have a first birth at 15 or younger) may be better off, or not affected at all by the birth, because the incomes of other family members are larger. We speculate that the reason for this result may be that the very youngest are least likely to leave the parental home.

The Total and Indirect Effects of Age at First Birth: Blacks and Whites

This complicated process is explored further by dividing the sample by race.

Black and white women tend to differ significantly in their responses to early childbearing. Most notably, black teenagers are much less likely to marry as a result of pregnancy. Although the correlation between age at first birth and age at first marriage is .77 for whites, it is only .33 for blacks. Only 3% of first births to whites are premarital, compared with 34% of first births to blacks. Comparing average ages at first marriage and first birth of black and white women (Table 2), we see that whereas the mean age at marriage is about two years younger than mean age at first birth for whites, for black women age at marriage is higher than age at birth by exactly one year. Even among white women who have a first birth at or before reaching age 18, the average age at first marriage is lower (about a quarter of a year) than mean age at first birth. This reflects the much higher likelihood that a young white woman who has a first birth will marry at or before the birth than will a black woman. Yet even net of their different probabilities of marriage, the impact of an early first birth differs among black and white women.

In Table 9 the effects of being one year older at first birth on measures of economic well-being at age 27 are shown separately for blacks and whites. As we would expect, the results for white women and for the total sample (see Table 8) are very similar, since whites predominate numerically. Among whites, delaying a first birth substantially increases own earnings and other family income while it reduces the probability of living in poverty at age 27.

However, among black women the results are quite different. The surprising result is a small but negative total impact of being older at first birth on the earnings of a woman at age 27. It is primarily due to the weak links between schooling and later work experience and between schooling and the earnings of black women. These coefficients are positive, but not statistically significant. Schooling affects work experience only indirectly, through its effects on family size. Thus the indirect effects of age at first birth on own earnings through schooling are smaller among black than among white women.

The indirect effect of a first birth through family size is positive but smaller for blacks than for whites. In addition, through work experience there is a negative indirect impact of being older at first birth on the earnings of a woman at age 27 which offsets some of the positive effects of delayed childbearing. In contrast to whites, among blacks older childbearers accumulate *less* work experience, which reduces their hours worked and earnings. As a result of this negative indirect effect and the weak positive indirect effects described above, the total effect of a first birth on later earnings is slightly negative in this sample of blacks.

The finding that delay of a first birth is associated with less work experience among black women is surprising. The absence of a link between schooling and labor force experience and earnings also is unexpected. Taken together these results suggest that black teenage mothers move relatively quickly into the labor force, perhaps out of necessity, but perhaps out of an awareness that additional schooling would not translate into economic advantage anyway. In addition, among blacks, late childbearing is less frequent. Of the women having a birth by age 27, only 14% of the black women delayed past age 21, compared with 36% of the white women. As a result, black late childbearers may differ in important ways from their early childbearing sisters, ways we are not able to measure with these data. Finally, the sample size is very small, which may partially account for the lack of effects; however, other analyses have also failed to find strong effects of age at first birth among black women (see Moore et al., 1978a).

Conclusions: blacks and whites. Age at first birth does not appear to be as great a handicap for the black woman as it is for the white woman. Since teenage sexual activity and pregnancy are much more common among blacks than among whites (Zelnik and Kantner, 1977; 1978), social mechanisms for dealing with it and the children that result appear to be better established in black families and neighborhoods (see Stack, 1974, for example). Alternatively, since so many other factors handicap the black woman, the impact of

an early first birth may not be clearly distinguishable from the rest. Among both black and white women the primary *negative* indirect impact of an early first birth on later economic well-being is through its impact on family size. An early first birth means more children by age 27, with its concomitant negative impact on labor force participation and earnings. However, among black women, early childbearers accumulate more work experience than later childbearers, increasing their earnings at age 27. Thus an early first birth is associated with somewhat higher well-being among blacks; among whites, early childbearing predicts substantially lower income.

An early first birth has no impact directly or indirectly on the incomes of other family members and very little on the probability of being poor among blacks, whereas there is a substantial negative impact of an early first birth among whites both on other family incomes and on the probability of being poor at age 27.

DISCUSSION AND CONCLUSIONS

The age at which a woman bears her first child has important effects on her later economic well-being. With one exception, the effects of an early birth are indirect; they operate on later economic well-being through their impacts on family size, schooling, and labor force participation.¹² In general these indirect effects are negative; delaying a first birth does increase the well-being of a woman at age 27. However, even to say this much oversimplifies the complicated chain of associations between early childbearing and later economic well-being. The negative effects were expected: early childbearers have larger families, complete less schooling, and obtain less work experience; consequently, they earn less themselves, other family members earn less and they are more likely to be living in

poverty. However, there are several positive effects of early childbearing on income. Because early childbearers appear to work more hours at age 27, they are slightly better off. And, in addition, among the early childbearers (18 and under), the very earliest (age 15 or 16) may be better off than their sisters who have first births at age 17 or 18, due to the larger incomes of other family members among the former. This surprising result cannot be explained adequately with these data. However, drawing from other related work, we have suggested that it may be the greater likelihood that 17- and 18-year-old girls will leave the parental household that decreases their economic well-being later on. Those who marry leave the support of their parents to enter into unstable unions. Certainly their chances of having more children are increased, and they may be unable to obtain the human capital (either through schooling or through work) that would enable them to support themselves and their children when the necessity arises.

Overall, of course, later childbearers are much better off than early childbearers. The most important indirect effect of delaying a first birth is that total family size at age 27 is reduced. As a result, the total work experience, hours worked, and earnings of women, as well as the incomes of their husbands or other family members are higher. Net of family size, delaying a first birth increases the work experience a young woman obtains, which raises her hours worked and her earnings. This suggests that women who work either before marriage or between marriage and the arrival of a first child do build up substantial human capital, compared with those who have a first birth before entering the labor force.

Among the total sample, the indirect effect of an early first birth through schooling is small. An early first birth does lower the total amount of education received, and, therefore, the incomes of the woman and of other family members; however, the effect is important and large only among those who have that first birth while still in high school. Other research indicates that the effect of a first birth in removing women from the educational

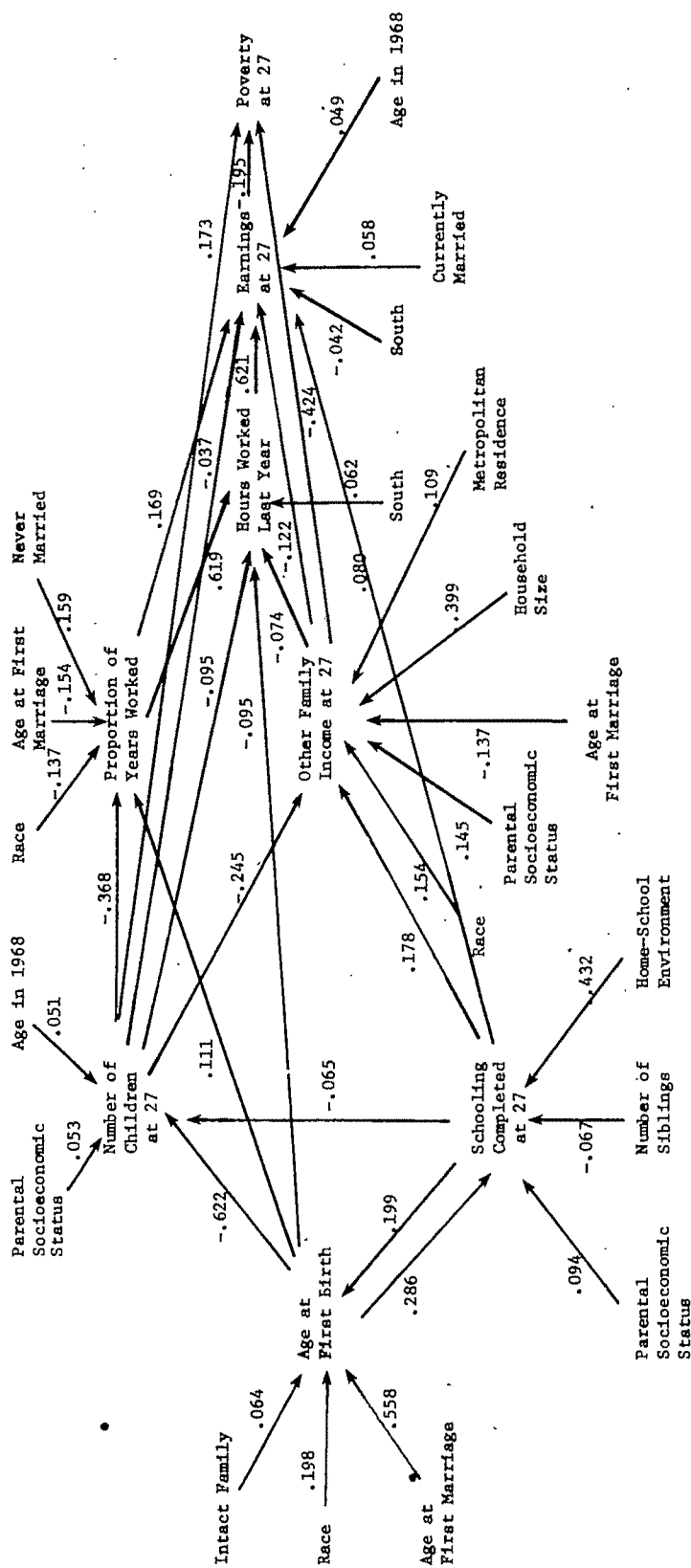
¹² The one direct effect (on other family income) would disappear if we were able to specify the appropriate intervening variables. In this data set, however, there is not enough information on other family members to do so.

system declines with years of schooling completed, with its strongest effect occurring during high school and between high school and college (Moore et al., 1978a).

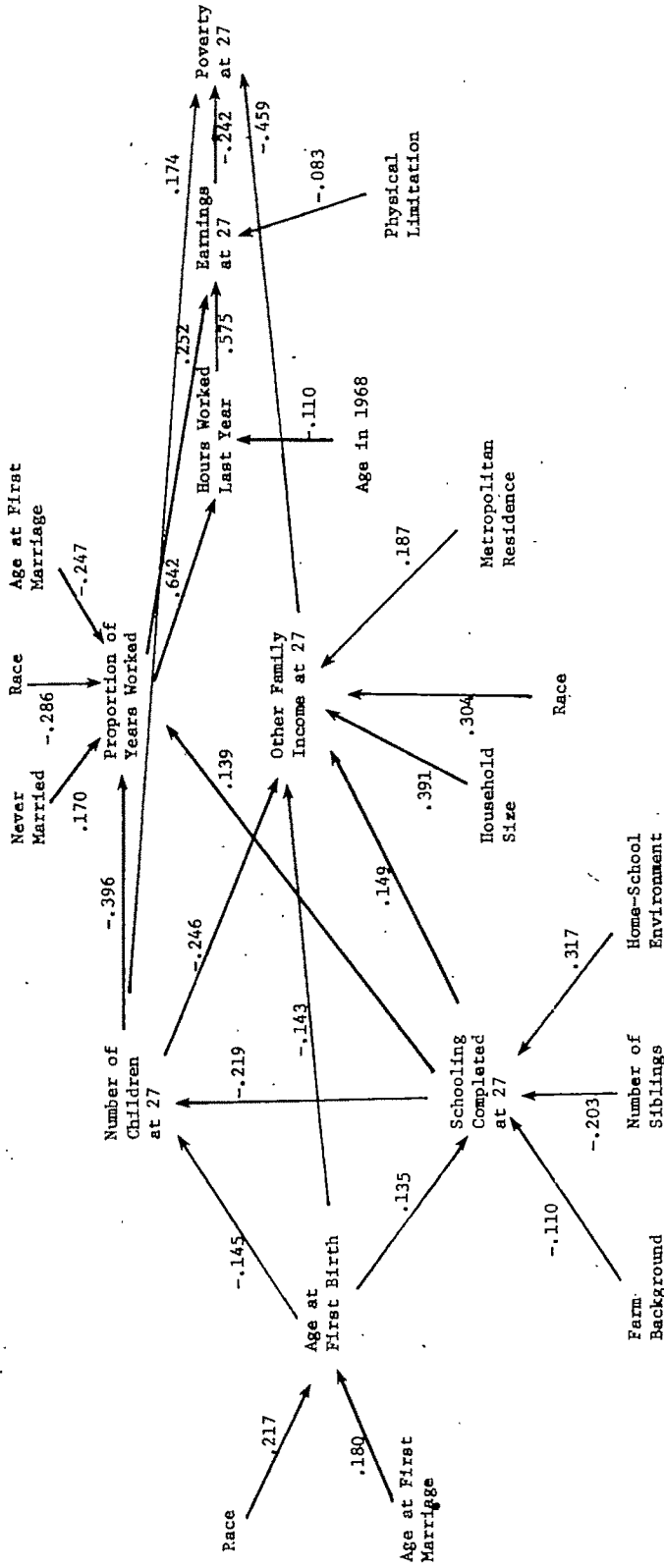
Of course, these women are still relatively young. Most have not completed their childbearing; some may return to school; most will work. Therefore, the size of the effects of age at first birth among these women at the end of the childbearing period is unknown. It appears most probable that using a fixed age-point midstream understates the effects of age at first birth. Of the balance of forces, the positive effects of later childbearing are likely to continue into the future (through greater schooling and smaller family size), more than the negative effects through hours worked last year. This is particularly so since the main component of this negative link is likely to be the age of the youngest child, a variable that changes much more regularly towards higher employment than does the number of children in the household (as a consequence of family size). In addition, the very late childbearer is excluded from the sample. Since such women are likely to be much better off economically, their exclusion also suggests that we have underestimated the effects of an early first birth.

What are the implications of this research for researchers and policy makers? The implication for analysts of status attainment lies in the importance of including age at first birth, and perhaps age at first marriage, in models of the attainment of women, and presumably, for men as well. This type of analysis raises more questions about the relationships among the labor force participation of women, marriage, fertility, and socioeconomic well-being than it answers; however, new questions often lead to new discoveries.

For policy makers the primary implication of this research is that teenage childbearing appears to have fairly long-lasting negative consequences. Preventing teenage pregnancy is, of course, the most effective way to break the link between early childbearing and poverty. However, by tracing the causal associations we have established other points of intervention: between an early birth and lowered schooling, between an early birth and larger total family size, and between an early birth and lowered work experience, as well as between points later in the causal chain. In addition, the sizes of the indirect effects in the different subsamples suggest the relative effectiveness of various types of program interventions following a first birth in reducing the chance a mother will end up in poverty. The primary indirect negative impact on household income of an early birth to a teenager operates through schooling. This suggests as an important program focus special school programs, combined with infant day care, so that the high school student might finish. The surprisingly small impact of an early birth on later well-being among the very earliest childbearers suggests that policies enabling unmarried mothers to remain with their families or other relatives rather than encouraging them to form their own households may be desirable. Once they are out of high school, the indirect negative effects of an early birth operate primarily through increased family size and lowered work experience. Such young women need access to family planning services to delay subsequent births, thus reducing total family size. Also following logically from our research are policies such as job counseling and training to break the causal association between early births and later economic well-being.



a/ Standardized Coefficients; only those significant at the .05 level or better are presented here; N = 1268.



a/ Standardized Coefficients; only those significant at the .05 level or better are presented here; N = 256.

Appendix Figure 2: Path Model, 27-Year-Old Women Whose Age at First Birth Was Less Than or Equal to 18 (National Longitudinal Survey of Young Women)^a

APPENDIX

STRUCTURAL EQUATIONS*

$$\begin{aligned}x_1 &= \text{Exogenous;} \\x_2 &= b_{21}x_1 + u_2; \\x_3 &= b_{31}x_1 + b_{32}x_2 + u_3; \\x_4 &= b_{41}x_1 + b_{42}x_2 + b_{43}x_3 + u_4; \\x_5 &= b_{51}x_1 + b_{52}x_2 + b_{53}x_3 + u_5; \\x_6 &= b_{61}x_1 + b_{62}x_2 + b_{63}x_3 + b_{64}x_4 + b_{65}x_5 + u_6; \\x_7 &= b_{71}x_1 + b_{72}x_2 + b_{73}x_3 + b_{74}x_4 + b_{75}x_5 + b_{76}x_6 \\&\quad + u_7; \\x_8 &= b_{82}x_3 + b_{86}x_6 + b_{87}x_7 + u_8.\end{aligned}$$

REDUCED FORM EQUATIONS

$$\begin{aligned}x_1 &= \text{Exogenous;} \\x_2 &= b_{21}x_1 + v_2; \\x_3 &= (b_{31}b_{21} + b_{32})x_1 + v_3; \\x_4 &= (b_{41} + b_{42}b_{21} + b_{43}b_{31} + b_{43}b_{32}b_{21})x_1 + v_4; \\x_5 &= (b_{51} + b_{52}b_{21} + b_{53}b_{31} + b_{53}b_{32}b_{21})x_1 + v_5; \\x_6 &= (b_{61} + b_{62}b_{21} + b_{63}b_{31} + b_{63}b_{32}b_{21} + b_{64}b_{41} \\&\quad + b_{64}b_{42}b_{21} + b_{64}b_{43}b_{31} + b_{64}b_{43}b_{32}b_{21} + b_{65}b_{51} \\&\quad + b_{65}b_{52}b_{21} + b_{65}b_{53}b_{31} + b_{65}b_{53}b_{32}b_{21})x_1 + v_6; \\x_7 &= (b_{71} + b_{72}b_{21} + b_{73}b_{31} + b_{73}b_{32}b_{21} + b_{74}b_{41} \\&\quad + b_{74}b_{42}b_{21} + b_{74}b_{43}b_{31} + b_{74}b_{43}b_{32}b_{21} + b_{75}b_{51} \\&\quad + b_{75}b_{52}b_{21} + b_{75}b_{53}b_{31} + b_{75}b_{53}b_{32}b_{21} + b_{76}b_{61} \\&\quad + b_{76}b_{62}b_{21} + b_{76}b_{63}b_{31} + b_{76}b_{63}b_{32}b_{21} \\&\quad + b_{76}b_{64}b_{41} \\&\quad + b_{76}b_{64}b_{42}b_{21} + b_{76}b_{64}b_{43}b_{31} + b_{76}b_{64}b_{43}b_{32}b_{21} \\&\quad + b_{76}b_{65}b_{51} + b_{76}b_{65}b_{52}b_{21} + b_{76}b_{65}b_{53}b_{31} \\&\quad + b_{76}b_{65}b_{53}b_{32}b_{21})x_1 + v_7; \\x_8 &= (b_{82}b_{31} + b_{83}b_{31} + b_{85}b_{51} + b_{85}b_{52}b_{21} \\&\quad + b_{85}b_{53}b_{31} + b_{85}b_{53}b_{32}b_{21} + b_{87}b_{74}b_{41} \\&\quad + b_{87}b_{74}b_{42}b_{21} + b_{87}b_{74}b_{43}b_{31} + b_{87}b_{74}b_{43}b_{32}b_{21} \\&\quad + b_{87}b_{75}b_{51} + b_{87}b_{75}b_{52}b_{21} + b_{87}b_{75}b_{53}b_{31} \\&\quad + b_{87}b_{75}b_{53}b_{32}b_{21} + b_{87}b_{76}b_{61} + b_{87}b_{76}b_{62}b_{21} \\&\quad + b_{87}b_{76}b_{63}b_{31} + b_{87}b_{76}b_{63}b_{32}b_{21} + b_{87}b_{76}b_{64}b_{41} \\&\quad + b_{87}b_{76}b_{64}b_{42}b_{21} + b_{87}b_{76}b_{64}b_{43}b_{31} \\&\quad + b_{87}b_{76}b_{64}b_{43}b_{32}b_{21} + b_{87}b_{76}b_{65}b_{51} \\&\quad + b_{87}b_{76}b_{65}b_{52}b_{21} + b_{87}b_{76}b_{65}b_{53}b_{31} \\&\quad + b_{87}b_{76}b_{65}b_{53}b_{32}b_{21} + b_{87}b_{77} + b_{87}b_{77}b_{21} \\&\quad + b_{87}b_{73}b_{31} + b_{87}b_{73}b_{32}b_{21})x_1 + v_8.\end{aligned}$$

$$\begin{aligned}x_8 &= (b_{82}b_{31} + b_{83}b_{31} + b_{85}b_{51} + b_{85}b_{52}b_{21} \\&\quad + b_{85}b_{53}b_{31} + b_{85}b_{53}b_{32}b_{21} + b_{87}b_{74}b_{41} \\&\quad + b_{87}b_{74}b_{42}b_{21} + b_{87}b_{74}b_{43}b_{31} + b_{87}b_{74}b_{43}b_{32}b_{21} \\&\quad + b_{87}b_{75}b_{51} + b_{87}b_{75}b_{52}b_{21} + b_{87}b_{75}b_{53}b_{31} \\&\quad + b_{87}b_{75}b_{53}b_{32}b_{21} + b_{87}b_{76}b_{61} + b_{87}b_{76}b_{62}b_{21} \\&\quad + b_{87}b_{76}b_{63}b_{31} + b_{87}b_{76}b_{63}b_{32}b_{21} + b_{87}b_{76}b_{64}b_{41} \\&\quad + b_{87}b_{76}b_{64}b_{42}b_{21} + b_{87}b_{76}b_{64}b_{43}b_{31} \\&\quad + b_{87}b_{76}b_{64}b_{43}b_{32}b_{21} + b_{87}b_{76}b_{65}b_{51} \\&\quad + b_{87}b_{76}b_{65}b_{52}b_{21} + b_{87}b_{76}b_{65}b_{53}b_{31} \\&\quad + b_{87}b_{76}b_{65}b_{53}b_{32}b_{21} + b_{87}b_{77} + b_{87}b_{77}b_{21} \\&\quad + b_{87}b_{73}b_{31} + b_{87}b_{73}b_{32}b_{21})x_1 + v_8.\end{aligned}$$

* Simplified to illustrate only the estimation of the effects of age at first birth (x_1) on later variables. Assume all exogenous variables to be contained in "u." $\text{Cov}(u_{ij}) = 0$. Refer to Tables 3-7 for complete equations.

- x_1 = Age at first birth.
- x_2 = Education (years of schooling) at 27.
- x_3 = Number of children at 27.
- x_4 = Work experience at 27.
- x_5 = Other family income at 27.
- x_6 = Hours worked last year.
- x_7 = Respondent's own earnings at 27.
- x_8 = Poverty status of family at 27.

REFERENCES

- Alwin, Duane F. and Robert M. Hauser
1975 "The decomposition of effects in path analysis." *American Sociological Review* 40:37-47.
- Bacon, Lloyd
1974 "Early motherhood, accelerated role transition, and social pathologies." *Social Forces* 52:333-41.
- Blau, P. M. and O. D. Duncan
1967 *The American Occupational Structure*. New York: Wiley.
- Bonham, Gordon S.
1977 "Who adopts: the relationship of adoption and social-demographic characteristics of women." *Journal of Marriage and the Family* 39:295-306.
- Bonham, Gordon and Paul Placek
1975 "The impact of social and demographic, maternal health and infant health factors on expected family size." Paper presented at the annual meeting of the Population Association of America, Seattle.
- Bowen, William and T. A. Finnegan
1969 *The Economics of Labor Force Participation*. Princeton: Princeton University Press.
- Bumpass, Larry L.
1969 "Age at marriage as a variable in socioeconomic differentials in fertility." *Demography* 6:45-54.
- Bumpass, Larry L., Ronald R. Rindfuss and Richard B. Janosik
1978 "Age and marital status at first birth and the pace of subsequent fertility." *Demography* 15:75-86.
- Bumpass, Larry L. and James Sweet
1972 "Differentials in marital stability: 1970." *American Sociological Review* 37:754-66.
- Cain, Pamela
1978 "Socio-economic determinants of women's current labor force participation: a closer look." Paper presented at the annual meeting of the Population Association of America, Atlanta.
- Coombs, Lolagene C., Ronald Freedman, Judith Friedman, and William F. Pratt
1970 "Premarital pregnancy and status before and after marriage." *American Journal of Sociology* 75:800-20.
- Cutright, Phillips
1973 "Timing the first birth: does it matter?" *Journal of Marriage and the Family* 35:585-95.
- Darian, Jean C.
1975 "Convenience of work and the job constraint of children." *Demography* 12:245-58.
- Duncan, O. D.
1975 *Introduction to Structural Equation Models*. New York: Academic Press.
- Duncan, O. D., D. L. Featherman, and B. Duncan
1972 *Socioeconomic Background and Achievement*. New York: Seminar Press.
- Farkas, George
1977 "Cohort, age, and period effects upon the

- employment of white females: evidence for 1957-1968." *Demography* 14:33-42.
- Featherman, David L. and Robert M. Hauser
1976 "Sexual inequalities and socioeconomic achievement in the U.S., 1962-1973." *American Sociological Review* 41:462-83.
- Furstenberg, Frank F., Jr.
1976 *Unplanned Parenthood: The Social Consequences of Teenage Childbearing*. New York: Free Press.
- Furstenberg, Frank F., Jr., and Albert G. Crawford
1978 "Family support: helping teenage mothers to cope." *Family Planning Perspectives* 10: 322-33.
- Glick, Paul C. and Arthur J. Norton
1977 "Marriage, divorce, and remarriage by family characteristics: June 1975." *Current Population Reports. Ser. P-20, No. 312*. Washington, D.C.: U.S. Government Printing Office.
- Hanushek, Eric and John Jackson
1977 *Statistical Methods for Social Scientists*. New York: Academic Press.
- Heckman, James J.
1978 "Statistical models for discrete panel data developed and applied to test the hypothesis of true state dependence against the hypothesis of spurious state dependence." Preliminary draft, July. *Annales de l'Insee* 30-31:227-70.
- Heise, David R.
1975 *Causal Analysis*. New York: Wiley.
- Hofferth, Sandra L. and Kristin A. Moore
1978 "The consequences of age at first childbirth: causal models." Working paper 1146-06. Washington, D.C.: Urban Institute.
- Hofferth, Sandra L., Kristin A. Moore, and Steven B. Caldwell
1978 "The consequences of age at first childbirth: labor force participation and earnings." Working paper 1146-04. Washington, D.C.: Urban Institute.
- Hoffman, Sol
1977 "Marital instability and the economic status of women." *Demography* 14:67-76.
- Hudis, Paula
1976 "Commitment to work and to family: marital status differences in women's earnings." *Journal of Marriage and the Family* 38:267-78.
1977 "Commitment to work and wages: earnings differences of black and white women." *Sociology of Work and Occupations* 4: 123-46.
- Janowitz, Barbara S.
1976 "An analysis of the impact of education on family size." *Demography* 13:189-98.
- Johnson, Nan E. and Shannon C. Stokes
1976 "Family size in successive generations: the effects of birth order, intergenerational change in lifestyle, and familial satisfaction." *Demography* 13:175-88.
- Johnston, J.
1972 *Econometric Methods*. New York: McGraw-Hill.
- McClendon, McKee J.
1976 "The occupational status attainment processes of males and females." *American Sociological Review* 41:52-64.
- Marini, Margaret Mooney
1978 "Transition to adulthood." *American Sociological Review* 43:483-507.
1979 "Maximum likelihood estimation in panel studies with missing data." *Sociological Methodology* 1980. San Francisco: Jossey-Bass.
- Mason, Karen
1974 *Women's Labor Force Participation and Fertility*. Research Triangle Park: Research Triangle Institute.
- Michael, Robert T.
1974 "Education and the derived demand for children." Pp. 120-56 in T. W. Schultz (ed.), *Economics of the Family: Marriage, Children, and Human Capital*. Chicago: University of Chicago Press.
- Moore, Kristin A. and Sandra L. Hofferth
Forth- "Factors affecting early family formation: a comparison model." *Journal of Population: Behavioral, Social and Environmental Issues*.
- Moore, Kristin A., Linda Waite, Steven Caldwell, and Sandra Hofferth
1978a "The consequences of age at first childbirth: education." Working paper 1146-01. Washington, D.C.: Urban Institute.
1978b "The consequences of age at first childbirth: marriage, separation, and divorce." Working paper 1146-03. Washington, D.C.: Urban Institute.
- Mott, Frank L. and Lois B. Shaw
1978 "Work and family in the school leaving years: a comparison of female high school graduates and dropouts." Revised version of a paper presented at the Conference on Young Women and Employment, sponsored by the Women's Bureau in conjunction with the Office of Youth Programs, Department of Labor, Washington, D.C.
- Norton, Arthur J. and Paul C. Glick
1976 "Marital instability: past, present and future." *Journal of Social Issues* 34:5-20.
- Parnes, H. S., John R. Shea, Robert D. Roderick, Frederick A. Zeller, Andrew I. Kohen, and Associates
1971 *Years for Decision. Vols. 1-3*. U.S. Department of Labor, Manpower Administration. Washington, D. C.: U.S. Government Printing Office.
- Polachek, Solomon W.
1975 "Discontinuous labor force participation and its effect on women's market earnings." Pp. 90-122 in Cynthia Lloyd (ed.), *Sex, Discrimination, and the Division of Labor*. New York: Columbia University Press.
- Porter, James N.
1974 "Race, socialization and mobility in education and early occupational attainment." *American Sociological Review* 39:303-16.

- Portes, Alejandro and Kenneth L. Wilson
1976 "Black-white differences in educational attainment." *American Sociological Review* 41:414-31.
- Presser, Harriet B.
1971 "The timing of the first birth, female roles and black fertility." *Milbank Memorial Fund Quarterly* 49:329-61.
- Rossi, A. S.
1968 "Transition to parenthood." *Journal of Marriage and the Family* 30:26-39.
- Ryder, Norman B. and Charles F. Westoff
1971 *Reproduction in the United States 1965*. Princeton: Princeton University Press.
- Sewell, W. H. and V. P. Shah
1967 "Socioeconomic status, intelligence, and the attainment of higher education." *Sociology of Education* 40:1-23.
1968 "Parents' education and children's educational aspirations and achievements." *American Sociological Review* 33:191-209.
- Smith-Lovin, Lynn and Ann R. Tickamyer
1978 "Labor force participation, fertility behavior, and sex role attitudes." *American Sociological Review* 43:541-57.
- Stack, Carol B.
1974 *All Our Kin: Strategies for Survival in a Black Community*. New York: Harper.
- Suter, Larry E. and Herman P. Miller
1973 "Income differences between men and career women." *American Journal of Sociology* 78:200-12.
- Sweet, James
1968 *Family composition and the labor force activity of married women in the U.S.* Ph.D. dissertation, Department of Sociology, University of Michigan.
- Treiman, Donald J. and Robert M. Hauser
1975 "The intergenerational transmission of income." Working paper 75-29. Center for Demography and Ecology, University of Wisconsin, Madison.
- Treiman, Donald J. and Kermit Terrell
1975 "Sex and the process of status attainment: a comparison of working men and women." *American Sociological Review* 40:174-200.
- U.S. Bureau of the Census
1976a "Educational attainment in the United States: March 1975." *Current Population Reports Ser. P-20, No. 295*. Washington, D.C.: U.S. Government Printing Office.
1976b "Population characteristics: fertility of American women, June 1975." *Current Population Reports. Ser. P-20, No. 301*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Health, Education and Welfare
1976a *The Measure of Poverty: Characteristics of Low-Income Populations Under Alternative Poverty Definitions. Technical Paper 18*, by Lawrence L. Brown. Washington, D.C.
1976b *Monthly Vital Statistics Report. Provisional statistics, annual summary for the U.S., 1975: births, deaths, marriages, and divorces. 24(13)*. Rockville: National Center for Health Statistics.
1979 *Vital Statistics Report. Advance Report, Final Natality Statistics, 1977. 27(11)*. Rockville: National Center for Health Statistics.
- Waite, Linda J. and Ross M. Stolzenberg
1976 "Intended childbearing and labor force participation of young women: insights from non-recursive models." *American Sociological Review* 41:235-52.
- Weller, Robert H.
1977 "Wife's employment and cumulative family size in the United States, 1970 and 1960." *Demography* 14:43-65.
- Westoff, Charles F., Robert G. Potter, Jr., Philip C. Sagi and Elliot G. Mishler
1961 *Family Growth in Metropolitan America*. Princeton: Princeton University Press.
- Zelnik, Melvin and John F. Kantner
1977 "Sexual and contraceptive experience of young unmarried women in the U.S., 1976 and 1971." *Family Planning Perspectives* 9: 55-73.
1978 "Contraception and premarital pregnancies among teenagers: 1976." *Family Planning Perspectives* 10:135-43.

ENTRANCE INTO THE ACADEMIC CAREER*

J. SCOTT LONG

Washington State University

PAUL D. ALLISON

ROBERT MCGINNIS

Cornell University

American Sociological Review 1979, Vol. 44 (October):816-830

This paper examines the initial academic placement of 239 male, Ph.D. biochemists. Position in the academic stratification system, according to the normative structure of science proposed by Merton, should be allocated universalistically on the basis of a scientist's contribution to the body of scientific knowledge. Our analyses, however, show that after controlling for the effects of doctoral origins and the prestige of the mentor, preemployment productivity has an insignificant effect on the prestige of the scientist's first academic position. This basic finding is elaborated by examining the effects of postdoctoral fellowships, additional characteristics of the doctoral department, and the academic rank of the position obtained. In no instance does preemployment productivity affect the prestige of the first job. The universalistic nature of the scientific stratification system is assessed by comparing those factors which determine job allocation to those which predict scientific productivity later in the career. It is found that prestige of a scientist's first teaching position is least influenced by those factors which are most predictive of future productivity and most influenced by those factors which are likely to involve ascriptive processes.

One of the most persistent findings in the study of stratification in science is the substantial correlation between the prestige of the university department which currently employs a scientist and the prestige of his doctoral department (Caplow and McGee, 1958:225; Berelson, 1960:127; Crane, 1965; Hargens and Hagstrom, 1967; Hagstrom and Hargens, 1968; Cole and Cole, 1973:98). This relationship suggests two alternative interpretations. First, the correlation may be evidence for the operation of ascriptive or particularistic hiring patterns. This would be true to the extent that the prestige of a student's doctoral department aids him in obtaining a prestigious academic appointment, independently of his demonstrated ability. Second, the prestige of a student's doctoral department may be associated with factors indicating his ability as a scientist, and hence the correlation between doctoral prestige and the prestige of the hiring department

would reflect the universalistic allocation of rewards in the scientific community.

Evidence for these alternative explanations is mixed. When both doctoral prestige and measures of scientific productivity are introduced into analyses predicting current prestige, the effect of doctoral prestige is somewhat reduced (Hargens and Hagstrom, 1967; Cole and Cole, 1973:98). Nevertheless, the effect of doctoral prestige remains significant and approximately equal to (or greater than) the effect of productivity. This result suggests *at least* a partial departure from the norm of universalism in science which requires that "scientific careers be open to talent" and that "recognition and esteem accrue to those who have best fulfilled their roles, to those who have made original contributions to the body of scientific knowledge" (Merton, 1973:272, 293). Indeed, on the basis of her findings, Crane (1970:961) concluded: "It could be argued that despite the system's normative commitment to universalistic criteria, they are not utilized in practice." In short, past studies do not support the contention that academic position is allocated exclusively, or even largely, on the basis of scientific productivity.

This lack of correspondence between scientific productivity and academic position is not simply a temporary inequity

* Address all communications to: J. Scott Long; Department of Sociology; Washington State University; Pullman, WA 99164.

We would like to thank Lowell Hargens, Barbara Reskin and an anonymous reviewer for their comments on an earlier version of this paper. Support was provided by NIH Contract N01-OD-4-2175 awarded to Cornell's Research Program on Social Analysis of Science Systems.

soon to be corrected by later mobility, but has lasting consequences for the individual scientist. Hagstrom and Hargens (1968) report a correlation of .68 between the prestige of first and current positions (which may be the same) for scientists in four fields. Even when they exclude those scientists who received their degrees less than 25 years earlier, the correlation was over .65. Moreover, for every subgroup studied the prestige of the first job was a much better predictor of the prestige of the current job than was the current number of publications. It should be noted, however, that these high correlations are partly a consequence of the fact that many scientists remain in the same department for most of their careers. For those who do change jobs, the correlations are much lower (Allison, 1976:207; Long, 1978). Nonetheless, given the immobility of many scientists, where a scientist ends up depends largely on where he starts, as Caplow and McGee (1958:225) have suggested.

The initial misallocation of position may be not only unfair to individual scientists, but also potentially damaging to scientific progress. As Zuckerman (1970:246) has suggested, regardless of the mechanism by which the first academic job is allocated, being located at a university with superior resources and stimulating colleagues should give the young scientist a significant boost in his career. Many of the rewards associated with prestigious departments are also prerequisites for future productivity (cf. Cartter, 1966; Brown, 1967; Clark et al., 1976). And indeed, Long (1978) has shown that departmental location has a major impact on a scientist's future productivity. Consequently, to the extent that prestigious position and valuable resources are allocated to those not best able to utilize them, overall scientific productivity may be reduced.

It now appears that earlier studies have *overestimated* the effects of productivity on the prestige of current affiliation. Hence, the violation of the norm of universalism may be more serious than previously thought. The problem arises from the fact that these studies (with the exception of Crane, 1965) measured departmental prestige and individual pro-

ductivity at the same point in time, raising the possibility that it is the prestige of the department (or its correlates) that affects productivity rather than the reverse. With longitudinal data, Long (1978) has presented evidence for just this possibility. In this paper we extend those results by showing that the prestige of a scientist's first teaching position is least influenced by those factors which are most predictive of future research productivity and most influenced by those factors which are likely to involve ascriptive processes.

Before turning to the data, let us briefly consider how the first job might be allocated. It is worth remembering that academic jobs are not allocated by some master decision maker, but by a market mechanism in which departments compete for the most desirable candidates. The process occurs in three stages: candidates decide which jobs to apply for, departments choose candidates for the vacancies, and candidates choose among the offers they receive. Since the candidates themselves play such a large role in the final outcome, it would be misleading to interpret observed correlations between departmental and doctoral prestige as indicative only of *departments'* preferences and procedures (Cole and Cole, 1973:97). Nevertheless, most new Ph.D.s stress the importance of prestige or its correlates in choosing jobs (Brown, 1967), and we will not take this as problematic.

Assuming, then, that prestigious departments have a competitive advantage in recruiting new faculty, the question becomes which characteristics of students provide them with a competitive advantage over others? Suppose that departments recruited new Ph.D.s in a completely universalistic fashion. If universalism means choosing those candidates who have made the greatest scientific research contributions, then we would expect the number and estimated quality of predoctoral research publications to be major criteria. But new doctorates have not had much time to demonstrate their ability through publications. The evaluation of those publications is further complicated by the fact that many of the predoctoral publications are coauthored with

the dissertation supervisor or other faculty members who may have played the major role in the design and interpretation of the research.

It is much more reasonable to expect universalistic departments to base their decision on expected *future* scientific contributions, and these expectations legitimately may depend on many factors besides predoctoral productivity. It may be that the prestige of the doctoral department is in fact a good indicator of future productivity, either because prestigious departments manage to recruit the best students or because they provide superior training. In fact, Cartter (1966) showed that subjective ratings of departments' effectiveness of graduate training were correlated almost perfectly with a measure of departmental prestige. For exactly the same reasons, the reputation of a new doctorate's dissertation supervisor—hereafter referred to as the mentor—may be a reasonable indicator of a scientist's future performance.

While there are only a few optimal ways to practice universalism, particularism can have many faces. Caplow and McGee (1958:127–8), for example, have suggested that departments choose candidates almost entirely on their expected contributions to the prestige of the department: "Men are hired, to put it baldly, on the basis of how good they will look to others." As a consequence, departments give only a cursory examination of the candidate's written work and concentrate, instead, on where he comes from and who recommends him. Such a process may still appear to be universalistic if disciplinary prestige is associated strongly with research productivity. Moreover, if departments really want to hire the most prestigious candidate, they will conduct a wide search and not give preference to other criteria.

More insidious is the notion that academic jobs are secured primarily through social ties. Many studies have shown that blue-collar workers find most jobs through friends and relatives (see references in Granovetter, 1974:4–5) and Granovetter (1974) finds a similar pattern for professional workers, at least according to self-reports. Caplow and McGee (1958:110)

argue that departments often choose candidates on the basis of their social ties to the department. Inbreeding, the hiring of a new Ph.D. by his own doctoral department, is surely the most direct linkage. Somewhat more typical may be two-step ties in which the candidate is recommended by a friend of someone in the hiring department or a graduate of that department. To the degree that such ties are stratified, such a process should produce correlations between the prestige of the candidate's origin and the prestige of his destination.

All of these factors—past scientific contributions, expected future contributions, disciplinary prestige, and social ties—probably have some influence on the allocation of academic positions. Since each is consistent with a positive correlation between doctoral prestige and prestige of current position, it is difficult to assign relative weights to each factor. Nevertheless, the results presented in the remainder of this paper favor a particularistic interpretation. Specifically, it is shown that preemployment productivity has little if any impact on the prestige of the first position even though it is the best predictor of future productivity. While doctoral prestige has the strongest impact on the prestige of the first position, it has a much smaller impact on future productivity. Finally, it does not appear that departments make much use of any departmental-specific predictors of future productivity other than those that we have measured.

DATA AND MEASUREMENT

The sample consists of 239 male biochemists who received their Ph.D.s in fiscal years 1957, 1958, 1962 and 1963 and whose first faculty position was in a graduate department rated by Roose and Andersen (1970).¹ Career histories were

¹ Analysis was restricted to male biochemists due to the small number of females who obtained doctorates in biochemistry during this period, and to the difficulty in obtaining complete information on those females who did obtain degrees. Work is currently in progress to collect complete information on these females. Complete scores from the Roose and Andersen study were kindly provided by Charles J. Andersen.

obtained from *American Men and Women of Science* (tenth, eleventh and twelfth editions). The prestige of the doctoral department was measured by the complete three-digit rating of faculty quality of biochemistry departments, a partial listing of which appeared in Cartter (1966). These scores ranged from 100 for the least prestigious to 500 for the most prestigious. The prestige of the first job was somewhat more difficult to measure since the biochemists worked in several departments. Accordingly, a prestige score for each university was constructed based on a weighted average of the Roose and Andersen (1970) ratings of the departments of biochemistry (1/2), chemistry (1/4), physiology (1/12), microbiology/bacteriology (1/12) and pharmacology (1/12).² These scores also ranged from 100 to 500.

For all but two of the sample, the name of the mentor was obtained from *Dissertation Abstracts*, *Directory of Graduate Research*, or a mail survey of graduate deans. A measure of the mentor's accomplishments was obtained by counting citations to his or her first-authored publications in the 1961 *Science Citation Index*. While we will interpret these counts as a measure of prestige, it should be kept in mind that they may reflect both the performance of a scientist and his or her standing in the scientific community.

Productivity of the sample members was measured using counts of both publications and citations to them. *Chemical Abstracts* (1955-1973) was used to locate the articles published by the sample members, whether or not they were the senior author. Citations to these articles were coded from *Science Citation Index* (Vols. 1961, 1964, 1966, 1968, 1970, 1972, and 1974). The name of the first author on multiple-authored papers where the cohort member was not the first author was used to locate citations to junior authored papers; thus downward bias in counts for scientists who were predominantly junior authors was avoided. For a given year in the scientist's career, the publication measure reflects publications

in a three-year period ending in that year. The citation measure for that year is restricted to citations to papers published in that three-year period. Since coverage of *Science Citation Index* and *Chemical Abstracts* increased during the period covered by our analyses, counts were standardized within years of the Ph.D. For details, see Long (1978).

In addition to these key variables, Astin's (1971) measure of "selectivity" of the scientist's undergraduate institution was used. This index has values ranging from one to seven, with seven being the most selective category. This measure has been interpreted by some as a crude indicator of intelligence and by others as a measure of the quality of the undergraduate education. In any case, a number of studies have shown it to be a moderately good predictor of future success.

RESULTS

Consistent with earlier studies, we find a correlation of .39 between doctoral prestige and prestige of the first job. Destination prestige also has a correlation of .34 with mentor's citations, .22 with both undergraduate selectivity and citations, and .14 with publications. Equation 1 of Table 1 presents the results of entering these variables into a single regression equation. Doctoral prestige clearly has the strongest effect, followed by a moderate but significant effect of the mentor's prestige and a slightly weaker effect of baccalaureate selectivity. On the other hand, the effects of the two productivity measures are small, inconsistent in sign, and statistically insignificant. These results are similar to those reported by Long (1978) for a special subset of this sample.

For a clear interpretation of these findings, it is instructive to note the different effects of doctoral prestige and mentor's citations on the preemployment productivity of students, and their similar effects on the prestige of the initial academic position. While the prestige of the mentor and the doctoral department are moderately correlated ($r = .41$), they have quite different effects on predoctoral productivity. When the number of predoctoral publications and citations of our sample

² These weights (contained in parentheses) were based on estimates of the number of biochemists teaching in each field.

Table 1. Regressions Relating Preemployment Statuses of Biochemists to Prestige of First Position

Equation		Coefficients* of:						Intercept	R ²	d.f.
		PHD	MENT	SEL	PUB	CIT	ENRL			
1. All Biochemists	β	.282	.178	.144	-.021	.109			.224	231
	b	.241	5.60	9.25	-2.18	4.75		128.6		
	t	4.42	2.67	2.43	0.26	1.33				
2. All Biochemists, Enrollment Added	β	.416	.134	.117	-.028	.102	-.184		.243	230
	b	.335	4.22	7.52	-2.98	4.45	-.510	128.7		
	t	4.92	1.96	1.96	0.36	1.26	2.38			
3. All Biochemists, Institution Dummies Added	β	.445	.221	.134	-.029	.007	-.326		.353	210
	b	.380	6.96	8.62	-3.08	3.35	-.905	114.5		
	t	3.61	2.95	2.17	0.36	0.93	1.25			
	r	.390	.342	.223	.143	.221	.054			
: Test of significance of the 20 dummy variables— $F_{20,210}=1.79$, $p<.05$										
4. Inbred Biochemists Excluded	β	.340	.094	.135	-.052	.103	-.269		.169	178
	b	.283	2.97	8.43	-5.50	4.40	-.708	156.8		
	t	3.41	1.17	1.91	0.55	1.07	2.91			
	r	.235	.254	.216	.092	.161	-.089			

Note: Dependent variable is the Roose-Andersen bioscience prestige score of the first academic position. Item identifications are: PHD=Ph.D. prestige, Cartter prestige of the Ph.D. department; MENT=square root of five-year citation counts for mentor; SEL=selectivity of baccalaureate institution; PUB=publication level, square root of standardized levels of three-year publication counts ending in the first year of the first job; CIT=citation level, square roots of standardized values of citations to publications in the three-year period ending in the first year of the first job; ENRL=number of biochemistry graduate students enrolled in the doctoral department in 1962.

* Row β gives standardized regression coefficients; row b gives unstandardized regression coefficients; row t gives the t-statistics (with more than 120 degrees of freedom in the regression, critical values for a two-tailed test of significance at the .10, .05 and .01 levels are: 1.645, 1.960 and 2.576, respectively; for a one-tailed test the critical values are 1.282, 1.645 and 2.326 for significance levels .10, .05 and .01, respectively); row r gives zero-order correlation coefficients with dependent variable.

members are regressed on doctoral prestige, mentor's citations, enrolled time in graduate education and baccalaureate selectivity (regressions not shown), the effects of the mentor's prestige are strong, positive and statistically significant, while those of doctoral prestige are trivial and statistically insignificant. These results hold even after controlling for the extent of predoctoral collaboration with the mentor (regressions not shown). Yet, the influence of the mentor on his or her student's first academic position is weaker than that of departmental prestige, and operates directly rather than indirectly through the effect of productivity on departmental prestige of the initial academic appointment.

Our initial conclusion, then, is that neither the quantity nor the "quality" of one's early publications has significant influence on where one ends up in the prestige hierarchy. In the remainder of this paper, the baseline model presented in Equation 1 of Table 1 will be elaborated

in several ways. *In no case are any effects of productivity on the prestige of the first job found.*

Preemployment productivity. This lack of effect cannot be explained by any lack of variation in preemployment productivity. The publication measure used in Equation 1 had a mean of 2.8, a median of 2.2 and a variance of 5.7. The range was from 0 (14.6% of the cases) to 13 (0.4% of the cases). There was even more variation in the citation measure: the mean was 13.6, the median was 6.7, the variance was 260.4, and the range was from 0 to 90.

Neither are the results attributable to an improperly specified functional form. Although only results using a square root transformation of the productivity measures (used to reduce skewness) are reported, logarithmic and cube root transformations, as well as the untransformed counts, were tried. To eliminate further the possibility of bias or attenuation due to improper functional form, the productivity measures were entered as sets of

dummy variables. In addition to raw citation counts, the mean number of citations per paper was also tried as perhaps a better indicator of a candidate's ability. Finally, articles and citations to them which were not the result of coauthoring with the mentor also were examined. None of these measures had a significant effect on destination prestige. Thus it appears to be highly unlikely that the lack of effect of productivity is due to the way in which productivity was measured.

Doctoral prestige. It is possible that the effect of doctoral prestige is a consequence of its correlation with some other, more fundamental variable. Several characteristics of the doctoral institution were examined including Astin's (1971) measure of selectivity, whether or not the department was administratively located in an agricultural school, the percentage of all students who were graduate students, the year the first Ph.D. was awarded, the dollar amount of funding in 1964 from the National Institutes of Health (the principal agency supporting biochemical research), and several indicators of the size of the institution and its components. Only the number of biochemistry graduate students enrolled in 1962 had a significant effect on the prestige of the first job. Its effect was sizable and negative as shown in Equation 2 of Table 1. The coefficients for both mentor's citations and undergraduate selectivity were reduced by this addition to the model, but the effect of doctoral prestige increased by 50%. This increase is the result of the .60 correlation between enrollment size and doctoral prestige, and the fact that these two variables have effects on destination prestige that are opposite in sign.

Three explanations for the negative effect of enrollment seem reasonable. First, large enrollments may reflect more lenient admissions policies and thus lower average ability of graduates. Second, large enrollments may reduce the effectiveness of training during the graduate education. And finally, large enrollments tend to produce large graduating cohorts and the increased competition for available jobs may hurt all of the graduates of a department. Although we cannot distinguish empirically among these three explana-

tions, biochemistry enrollments will be added to the baseline model for the remainder of the analysis.

In Equation 3 of Table 1 we examined the possibility that there are other, unmeasured characteristics of institutions or departments which might help or hinder their doctorate graduates. This was accomplished by adding a set of 20 dummy variables representing the 20 biochemistry departments which graduated three or more of the doctorates in our sample. While these 20 departments represented only 29% of the producing departments, they accounted for 64% of the biochemists in the sample. The addition of these dummy variables increased the R^2 from .24 to .35 ($F_{20,210}=1.79$, $p<.01$), indicating that there are significant differences among departments in the prestige attainments of their graduates that cannot be attributed to the prestige of the doctoral departments themselves. For example, Johns Hopkins has a coefficient of -32, while Chicago has a coefficient of 65. This says that once the effect of origin prestige, mentor's citations, undergraduate selectivity and the individual's productivity have been removed, Hopkins graduates averaged 32 points lower and Chicago graduates 65 points higher in destination prestige than graduates of the 49 departments not represented by dummy variables. Moreover, net of other variables, the difference between the attainments of Hopkins graduates and Chicago graduates, 97 points on the prestige scale, is more than one standard deviation. Differences of this sort are very likely substantial, yet do not lend themselves to a simple explanation. None of the characteristics of departments and institutions that were mentioned above account for these differences, and from Equation 3 it is clear that they persist after controlling for departmental prestige, productivity of the mentor and individual productivity. It may be that they reflect peculiar characteristics of individual departments at a particular point in the history of the discipline or errors in the measurement of departmental prestige. Clearly, further investigation is needed here.

Equation 3 also provides additional support for the importance of departmen-

tal prestige in the allocation of academic positions to graduates, and the lack of importance of scientific productivity in this process. The effect of departmental prestige increased, as did the coefficients for the mentor's citations, departmental enrollment and undergraduate selectivity. The already small coefficients for productivity were reduced even further.

Hagstrom and Hargens (1968) have suggested that much of the association between doctoral prestige and the prestige of the first job may be accounted for by the phenomenon of inbreeding. When those scientists whose doctoral and first teaching institution were the same (i.e., inbred scientists) were excluded from their analysis, the effect of doctoral prestige on first job prestige was approximately halved. Besides inflating the effect of doctoral prestige, the inclusion of inbred scientists may attenuate the effect of preemployment productivity. This would follow if productivity were more important in the placing of scientists who are not inbred than for inbred scientists for whom particularistic factors are very likely to be operating. The inclusion of inbred scientists in Equations 1 through 3 of Table 1 might, then, contribute to the lack of importance of productivity. In Equation 4 the 52 biochemists who were inbred were excluded. The effect of doctoral prestige fell by only about 20% (compared with 50% for Hagstrom and Hargens), while the effects of productivity remained trivial and unchanged. The difference between these two studies in the effect of doctoral prestige appears to be the result of including enrollments in Equation 4. When this variable is omitted from the equation for noninbred scientists, the standardized coefficient for doctoral prestige falls from .34 to .15. The only variable whose effect has greatly changed is the mentor's citation level. When inbred scientists are excluded, the effect of the mentor is reduced and loses statistical significance, suggesting a process by which prestigious mentors at prestigious institutions seek to retain their students after they obtain a doctorate.

Postdoctoral training. For 65% of the sample, the first teaching job did not immediately follow the Ph.D., but was pre-

ceded by one or more years of postdoctoral research training. Fifty-eight percent of these individuals had job titles such as "postdoctoral fellow" or "trainee," while the remainder simply held brief positions as a research associate or a similar title. We have been unable to detect any differences in the career patterns of these two groups of postdoctoral appointees and accordingly have followed the prevailing practice of not distinguishing between "fellows" and those with "fellow-like" positions (Curtis, 1969:44). Hereafter, both groups will be referred to as fellows or postdoctorals.

It is reasonable to expect that holding a postdoctoral position should make some difference in how biochemists obtain their first teaching position. First, the mere passage of time and change of location should weaken ties with the doctoral institution while providing new social ties in the postdoctoral institution. Second, it may be argued that productivity is not important in the placement of new doctorates because they have not yet had the time to establish themselves as researchers. The postdoctoral fellowship provides the young scientist with additional time to demonstrate his or her competence through additional publications. On average, postdoctorals in our sample began their first teaching positions two and one-half years after the doctorate, with 46% having positions lasting three or more years. Finally, the additional research training received by fellows presumably should increase their desirability to academic employers in research intensive locations, resulting in a higher destination prestige for postdoctorals than for those without such advanced training (cf. Curtis, 1969:69-70).

For the most part, these expectations were not strongly supported by the data. When a dummy variable for postdoctoral position was added to the baseline model, it was found that fellows obtained positions only about 17 points higher on the prestige scale than nonfellows, net of other variables. The difference, however, was not statistically significant. An analysis of covariance (not shown) was then performed to determine if the effects of other variables in the model differed for

postdoctorals and nonpostdoctorals. Although, as expected, the effects were somewhat attenuated for the postdoctorals, none of the differences was statistically significant.

What is especially important about these null results is that even though postdoctorals have substantially more publications and citations than nonpostdoctorals, no effect of productivity on destination prestige is found. Fellows averaged 3.1 publications and 16.0 citations for the three-year period before the receipt of their first teaching position, compared with 2.1 publications and 9.0 citations for nonfellows. Even when all publications from two years before the doctorate until the year of the job were included in the regression for fellows, no effects of publications or citations were found. Clearly, the absence of productivity effects cannot be explained by insufficient time to publish.

It appears, then, that merely holding a postdoctoral position does not greatly affect one's entry into the academic career. There is evidence, however, that *where* one held such a position does make a difference. Seventy-six percent of the fellows were located in rated graduate departments, 17% were in prestigious locations other than United States graduate institutions (e.g., N.I.H., Cambridge University, Brookhaven National Laboratories), while the remaining 8% were located in either industrial laboratories or nongraduate educational institutions. After excluding nonfellows from the analysis, dummy variables indicating the type of location of the fellowship were added to the baseline model, yielding the results presented in Equation 1 of Table 2. Net of other variables, the destination prestige of low prestige fellows is nearly 60 points lower than that of fellows in rated departments. Those in prestigious locations, but not American graduate departments, also did worse but the difference was slight and not statistically significant.

By restricting the analysis to postdoctorals in rated departments, the effect of the prestige rating of the postdoctoral location could be added to the baseline model. Equations 3 and 4 of

Table 2 show that postdoctoral prestige is clearly the best predictor of the destination prestige, while the effect of the doctoral prestige is much reduced and no longer statistically significant. It is as if hiring departments pay attention only to an applicant's current position and disregard his previous institutional affiliation. Nevertheless, since doctoral prestige and postdoctoral prestige are moderately correlated ($r=.37$), the sum of the direct and indirect effects of doctoral prestige is not substantially reduced. Thus, to a certain extent, postdoctoral prestige mediates the effect of doctoral prestige. On the other hand, the results suggest that the fellowship is valuable in overcoming the negative influences of a doctorate from a low prestige institution.

Postdoctorals not only obtain a new location from which to launch their careers, but also a new mentor with whom they may work even more closely. Unfortunately, the names of these mentors are unavailable. We suspect that the inclusion of their citation level in the model would further reduce the effects of both doctoral prestige and the dissertation supervisor's citation level.

Overall, then, we may conclude that while postdoctorals as a group do not do much better in prestige attainments than nonpostdoctorals, the prestige of their postdoctoral position becomes the key determinant of the prestige of their first job. Further, even though fellows have had greater time in which to demonstrate their ability as researchers and have published significantly more papers, the effect of productivity on the prestige of their first teaching position remains statistically insignificant.

Academic rank. A final variable which should be considered is the academic rank of the first job. The trade-off between the cosmopolitan reward of position in a prestigious department and the local reward of high academic rank was discussed by Caplow and McGee (1958) who noted that downward mobility in the prestige hierarchy was almost always accompanied by advancement in academic rank. Hargens (as quoted by Cole and Cole, 1973:260) found a similar phenomenon in a larger sample of scientists. To incorporate

Table 2. Regressions Relating Preemployment Statuses of Fellows to Prestige of First Position

Equation	PHD	MENT	SEL	PUB	CIT	LOW	HIGH	POST	RANK	Inter- cept	R ²	d.f.
1. All Fellows	β	.244	.156	.128	.039	-.188	-.045				.220	146
	b	.204	4.70	8.32	4.27	-58.9	-10.2			161.5		
	t	2.88	1.83	1.70	0.40	0.32	2.44	0.61				
2. All Fellows, Rank Added	β	.241	.125	.128	.038	-.161	-.032		-.204		.259	145
	b	.200	3.76	8.32	4.13	-50.6	-7.22		-39.6	355.1		
	t	2.91	1.49	1.74	0.39	0.39	2.13	0.41	2.79			
	r	.362	.316	.224	.119	.190	-.212	-.071	-.276			
3. Fellows in Rated Departments	β	.201	.171	.151	.058	.034					.160	111
	b	.173	5.15	9.15	6.18	1.39				162.1		
	t	2.05	1.73	1.70	0.47	0.27						
4. Fellows in Rated Departments, Postdoctoral Prestige Added	β	.123	.147	.139	.048	.013		.311			.246	110
	b	.105	4.43	8.47	5.14	.546		.339		73.9		
	t	1.28	1.56	1.65	0.41	0.11		3.54				
5. Fellows in Rated Departments,	β	.128	.105	.147	.046	.017		.335	-.232		.297	109
	b	.110	3.17	8.95	4.90	.704		.364	-42.5	268.8		
	t	1.38	1.13	1.80	0.40	0.14		3.91	2.83			
	r	.299	.294	.223	.147	.192		.402	-.221			

Note: Dependent variable is the Roose-Andersen bioscience prestige score of the first academic position. Item identifications are: PHD=Ph.D. prestige, Carter prestige of the Ph.D. department; MENT=square root of five-year citation counts for mentor; SEL=selectivity of baccalaureate institution; PUB=publication level, square root of standardized levels of three-year publication counts ending in the first year of the first job; CIT=citation level, square root of standardized values of citations to publications in the three-year period ending in the first year of the first job; LOW=nonrated graduate school locations with low prestige; HIGH=nonrated graduate school locations with high prestige; POST=Roose-Andersen bioscience prestige score of the postdoctoral fellowship location; RANK=academic rank of first faculty position: 4=instructor, 5=assistant professor, 6=associate professor, 7=full professor.

^a Row β gives standardized regression coefficients; row b gives unstandardized regression coefficients; row t gives t-statistics; row r gives zero-order correlations with dependent variable.

this trade-off between rank and prestige into our model of the allocation of the initial teaching position, the independent variable of the academic rank of the first position was added.³ The results of this addition are presented in Equations 2 and 5 of Table 2. It proves to be an important variable, decreasing the expected prestige of the first job by approximately 40 points for every advancement in rank. When rank was included in the regression for all 239 biochemists (regression not shown), the effect was halved, although still significant, reflecting the lesser variation in the rank of the first position among non-fellows.

ASSESSING UNIVERSALISM

Let us summarize the results to this point. The principal determinant of the prestige of a biochemist's first teaching job is the prestige of his most recent departmental affiliation, with somewhat weaker effects of mentor's prestige and the selectivity of the undergraduate institution. A negative effect of the size of graduate enrollment in the doctoral department also is found, along with substantial differences among individual de-

partments which are unattributable to either their prestige or their enrollment. For fellows, there is a trade-off between academic rank and the prestige of the position accepted. In no case is an effect of preemployment productivity found.

These results are combined in the augmented model shown in Table 3. This regression differs from that in Equation 2 of Table 1 by the addition of a variable which is the prestige of the postdoctoral department for all those who held postdoctoral positions in rated departments.⁴ As before, doctoral prestige has the strongest effect, followed by postdoctoral prestige and doctoral enrollment. Mentor's citations and undergraduate selectivity have effects which are positive and marginally significant. The effects of publications and citations, however, are far from statistically significant.

Taken alone, these results do not tell us much about the observance of the norm of universalism in science. Certainly the absence of any productivity effects runs contrary to an extreme interpretation of universalism which would require that

³ Academic rank was coded as follows: 4=instructor; 5=assistant professor; 6=associate professor; 7=full professor. To determine the effects of this arbitrarily chosen metric, we also used a series of dummy variables to determine the effect of rank. The results were similar.

⁴ For biochemists who did not hold a postdoctoral position in rated graduate departments, this variable was assigned a value of 358, the mean for those who did not hold such positions. Also included in the equation was a dummy variable coded 1 if the individual did hold a postdoctoral position in a rated graduate department, otherwise 0. The coefficient for this variable has no substantive interpretation; it is included only to make the model invariant to the particular value (in this case 358) assigned to those cases without a postdoctoral prestige score.

Table 3. Regression Relating Preemployment Statuses of Fellows and Nonfellows to Prestige of First Position

Equation		Coefficients ^a of:							Inter- cept	R ²	d.f.
		PHD	MENT	SEL	PUB	CIT	ENRL	POST			
1. All	β	.379	.124	.104	-.041	.085	-.163	.171		.275	228
Biochemists	b	.324	3.90	6.67	-4.38	3.69	-.454	.277	37.8		
	t	4.52	1.84	1.75	0.53	1.06	2.13	2.94			
	r	.390	.342	.223	.143	.221	.054	.269			

Note: Dependent variable is the Roose-Andersen bioscience prestige score of the first academic position. Item identifications are: PHD=Ph.D. prestige, Cartter prestige of the Ph.D. department; MENT=square root of five-year citation counts for mentor; SEL=selectivity of baccalaureate institution; PUB=publication level, square root of standardized levels of three-year publication counts ending in the first year of the first job; CIT=citation level, square roots of standardized values of citations to publications in the three-year period ending in the first year of the first job; ENRL=number of biochemistry graduate students enrolled in the doctoral department in 1962; POST=Roose-Anderson bioscience prestige of fellowship location for fellows in rated graduate departments, 358 for others.

^a Row β gives standardized regression coefficients; row b gives unstandardized regression coefficients; row t gives t-statistics; row r gives zero-order correlations with dependent variable.

positional prestige be allocated only on the basis of past scientific contributions. But it is much more reasonable, and surely in keeping with Merton's notion of universalism, to expect departments to choose among new doctorates on the basis of their anticipated contributions. It is conceivable that preemployment productivity might actually be a very poor predictor of future productivity, while such variables as doctoral prestige and mentor's citations might be quite good indicators. Clearly departments which want doctorates who will be productive researchers should rationally base their choice on those variables which are known to be good predictors, not on some *a priori* distinction between universalistic and particularistic criteria.

Fortunately it is not necessary to speculate about the relative power of these variables in predicting future productivity. For our sample, future productivity was measured by the number of articles published in the fourth through sixth years after the receipt of the position and by the number of citations these publications received in the sixth year. These measures of future productivity were regressed on the variables considered thus far, restricting the analysis to the 134 biochemists who remained in the same department for at least six years. This restricted sample was necessary since earlier research (Long, 1978) has presented evidence for the importance of departmental location on productivity, a point to be examined below. The results are presented in Table 4.

The future level of publication is most strongly influenced by predoctoral publications as indicated by the strong and statistically significant standardized regression coefficient in Equation 1. The effects of doctoral prestige, postdoctoral prestige for fellows, the mentor's level of citations, and undergraduate selectivity are all positive, but their magnitudes are small and not statistically significant. It appears that those who publish early in their careers continue to publish, but that having a distinguished pedigree does not significantly affect future publication levels.

Doctoral origins appear to be far more

important in the determination of future citation levels. Equation 2 indicates that the prestige of the doctoral department along with the size of that department are the most important factors predicting future citations. The effect of prestige is strong and positive while the effect of enrollment is strong and negative; both effects are statistically significant. The effects of preemployment productivity are both positive and statistically significant, albeit slightly weaker than the effects of doctoral characteristics. The mentor's prestige and the selectivity of the undergraduate institution have insignificant effects. These results suggest that doctoral prestige may be useful as an indicator of future citation levels of job candidates, but that preemployment productivity also should be considered.

These results, while accurate as far as they go, do not adequately reflect the causal mechanism involved in the effect of origin on future productivity. As Long (1978) has shown in similar analyses for the same sample, departmental location of employment is an important factor in determining scientific productivity. This is reflected in Equations 3 and 4 in which the prestige of the current employer is added to the earlier equations. The results suggest quite a different story. Much of the effect of the origin department is not direct, but rather operates indirectly through the effect of origin prestige on the first job. Thus, origin prestige influences the prestige of the first job, and the prestige of the first job influences the productivity of the scientist while he holds that job. For publications, the prestige of the current employer is the second strongest factor, behind preemployment publications; the effects of all other variables are reduced and statistically insignificant. For citations, the effect of current prestige is the strongest factor, followed by the statistically significant effect of earlier publications. The effects of doctoral characteristics are greatly reduced and are no longer statistically significant.

The absence of any effect of the mentor's level of citations and the selectivity of the baccalaureate institution is a strong indication that using them as criteria for

Table 4. Regressions Relating Predoctoral Statuses, Institutional Location, Preemployment Productivity and Academic Rank to Productivity Six Years after Receipt of First Job, for Those 134 Biochemists Who Do Not Change Institutions

Equation	Coefficients* of:										Inter- cept	R ²	d.f.
	PHD	POST	MENT	SEL	ENRL	PUB	CIT	PRST					
1. Future Publications	β	.129	.121	.008	.114	-.055	.317	-.025				.165	124
	b	.00120	.00246	.00230	.0788	-.00157	.383	-.0119			-.0664		
	t	1.04	1.41	0.08	1.28	0.48	2.75	0.21					
2. Future Citations	β	3.06	.076	.033	.053	-.204	.203	.185				.276	124
	b	.00657	.00356	.0282	.0846	-.0135	.573	.207			-.475		
	t	2.64	0.95	0.37	0.63	1.91	1.90	1.67					
3. Future Publications, Current Prestige Added	β	.035	.075	-.031	.086	-.025	.325	-.047	.255			.211	123
	b	.000326	.00151	-.0112	.0594	-.000718	.394	-.0224	.00314		-.188		
	t	0.28	0.87	0.32	0.98	0.23	2.89	0.40	2.67				
4. Future Citations, Current Prestige Added	r	.165	.189	.159	.167	-.027	.332	.243	.331				
	β	.186	.016	-.016	.017	-.166	.214	.157	.324			.350	123
	b	.00399	.000748	-.0139	.0270	-.0110	.604	.176	.00932		-.837		
	t	1.62	0.20	0.19	0.21	1.63	2.10	1.48	3.74				
	r	.241	.191	.266	.188	-.079	.393	.394	.444				

Note: Dependent variables are square roots of standardized citation and publication levels for the three-year period ending in the sixth year of the first job. Item identifications are: PHD=Ph.D. prestige, Cartter prestige of the Ph.D. department; MENT=square root of five-year citation counts for mentor; SEL=selectivity of baccalaureate institution; PUB=publication level, square root of standardized levels of three-year publication counts ending in the first year of the first job;

CIT=citation level, square roots of standardized values of citations to publications in the three-year period ending in the first year of the job; PRST=Roose-Andersen bioscience prestige score of first job.

* Row β gives standardized regression coefficients; row b gives unstandardized regression coefficients; row t gives t-statistics; row r gives zero-order correlations with dependent variable.

awarding prestigious jobs is inconsistent with the principle of universalism. Similarly, the strong effect of preemployment productivity on later productivity suggests that departments are being nonmeritocratic in ignoring these variables in their hiring decisions. While doctoral characteristics have a strong effect on future citations when departmental location is not controlled for, our results suggest that this is the result of the particularistic effect of doctoral prestige on the allocation of the first job and the subsequent effect of departmental location on future productivity. Thus, rather than giving support for the use of doctoral characteristics as valid indicators of future productivity, it suggests the operation of cumulative advantage (cf. Allison and Stewart, 1974). After controlling for departmental location, the effect of doctoral prestige on future citations is still positive and marginally significant, but this is a weak defense of universalism.

Finally, the possibility that hiring departments made effective use of information concerning specific doctoral departments which we have not been able to measure was considered. Recall that significant differences among departments in the prestige attainments of their students were found that were unattributable to the prestige of the department. One possible explanation is that, apart from prestige, some departments were simply more effective than others in training or recruiting students with high research potential and that these differences were perceived by hiring departments. The evidence does not favor this explanation. When dummy variables for the 20 schools with the most biochemistry doctorates were entered into Equations 3 and 4 of Table 4 (regressions not shown), there was no significant increment in the R^2 . Thus, characteristics other than prestige and enrollment were not associated with differences in future research productivity.

SUMMARY AND CONCLUSIONS

The basic result with which this paper was begun has hardly been altered by the

preceding analysis: there is a substantial correlation between the prestige of scientists' doctoral departments and the prestige of their employing departments, and this relationship cannot be explained by any other variable that we have measured. In particular, it is not a consequence of the greater productivity of students from prestigious departments or of the fact that those from more prestigious departments have more prestigious mentors (an explanation suggested by Cole and Cole, 1973:117). For those who take postdoctoral training positions, the prestige of the postdoctoral institution replaces doctoral prestige as the key determinant of the prestige of the first teaching position. Besides this unexplained prestige effect, larger departments were found to do worse in placing their students net of other factors; moreover, there are significant differences among departments in the prestige attainments of their students which are not attributable to their prestige or enrollment.

To settle the question of whether the influence of doctoral prestige reflects universalistic or particularistic hiring practices, it is first necessary to determine whether doctoral prestige is a good predictor of later productivity. We have shown that it has only a modest effect on citation counts six years into the first job and virtually none on publications. But this result is overshadowed by the fact that preemployment productivity is a much better predictor of later productivity than doctoral prestige, either alone or in combination with other variables in this study. Yet, hiring departments seem to ignore completely this most obvious predictor of future productivity.

All of this seems to support the impressionistic conclusion of Caplow and McGee (1958) that hiring departments pay attention only to where a candidate comes from and who recommends him, while virtually ignoring written work, either published or unpublished. While the apparent effect of doctoral prestige on later productivity suggests that this process may not be entirely inconsistent with the meritocratic principle, we suspect that it is more accidental than deliberate. As evi-

dence for that interpretation, we note that for fellows it is the postdoctoral prestige that has the principal effect on first job prestige even though postdoctoral prestige has no independent effect on later productivity. It therefore appears that departments rely on current affiliation irrespective of any predictive validity for research productivity.

Although these results are for a single scientific field, we see nothing peculiar about biochemistry that would raise doubts about their generalizability. Biochemistry does have one of the highest percentages of students who take postdoctoral research positions (Curtis, 1969), but we have shown that there is little difference between those who do and those who do not take such positions. Biochemistry also tends to be split between an agricultural and a medical orientation, and we have shown elsewhere that those who get degrees from a medical or arts college are far more likely to get postdoctoral fellowships than those from agricultural colleges (McGinnis et al., 1979). Still, we have found no significant differences between these groups in the effects of other variables on the prestige of the first job.

It may be argued that the first job is not a good site for observing universalism in science since information about job candidates is relatively poor and, hence, particularistic factors are bound to creep in. We have shown, however, that departments do not make good use even of that information which is readily available to them, namely, the number of articles a candidate has published, and for fellows this represents the results of a significant period of research. Moreover, whether or not the allocation of initial employment is typical of decision making in other areas of science, the fact that so many scientists stay in that first position means there is only limited opportunity to correct mistakes. Finally, Long (1978) has shown that past productivity has little effect on the destination prestige of those who change jobs later in their careers. His sample size is small, however, and we are currently undertaking a much larger study of mid-career job changes.

REFERENCES

- Allison, Paul
1976 Processes of Stratification in Science. Ph D. dissertation, Department of Sociology, University of Wisconsin, Madison.
- Allison, Paul D. and John A. Stewart
1974 "Productivity differences among scientists: evidence for accumulative advantage." *American Sociological Review* 39:596-606.
- Astin, Alexander W.
1971 Predicting Academic Performance in College. New York: Free Press.
- Berelson, Eernard
1960 Graduate Education in the United States. New York: McGraw-Hill.
- Brown, David G.
1967 The Mobile Professors. Washington, D.C.: American Council on Education.
- Caplow, Theodore and Reece McGee
1958 The Academic Marketplace. Garden City: Doubleday.
- Cartter, Allan M.
1966 An Assessment of Quality in Graduate Education. Washington, D.C.: American Council on Education.
- Cattel Press
n.d. American Men and Women of Science. New York: Bowker.
- Chemical Abstracts Service
1955- Chemical Abstracts. Columbus: American
1973 Chemical Society.
- Clark, Mary Jo, Rodney T. Hartnett and Leonard L. Baird
1976 Assessing Dimensions of Quality in Doctoral Education: A Technical Report of a National Study of Three Fields. Princeton: Educational Testing Service.
- Cole, Jonathan R. and Stephen Cole
1973 Social Stratification in Science. Chicago: University of Chicago Press.
- Crane, Diana
1965 "Scientists at major and minor universities: a study in productivity and recognition." *American Sociological Review* 30: 699-714.
1970 "The academic marketplace revisited." *American Journal of Sociology* 7:953-64.
- Curtis, Richard B.
1969 The Invisible University: Postdoctoral Education in the United States. Washington, D.C.: National Academy of Sciences-National Research Council.
- Granovetter, Mark S.
1974 Getting a Job: A Study of Contacts and Careers. Cambridge, Ma.: Harvard University Press.
- Hagstrom, Warren O. and Lowell L. Hargens
1968 "Mobility theory in the sociology of science." Paper presented at the Cornell Conference on Human Mobility, Ithaca.
- Hargens, Lowell L. and Warren O. Hagstrom
1967 "Sponsored and contest mobility of American academic scientists." *Sociology of Education* 40:24-38.

- Institute for Scientific Information
1961- Science Citation Index. Philadelphia: Institute for Scientific Information.
1974
- Long, J. Scott
1978 "Productivity and academic position in the scientific career." *American Sociological Review* 43:889-908.
- McGinnis, R., J. S. Long and P. D. Allison
1979 "Postdoctoral appointments in bioscience: their allocation, pay-offs and returns to science." Unpublished paper. Department of Sociology, Cornell University, Ithaca.
- Merton, Robert K.
1973 *The Sociology of Science*. Chicago: University of Chicago Press.
- Roose, Kenneth D. and Charles J. Andersen
1970 *A Rating of Graduate Programs*. Washington, D.C.: American Council on Education.
- Xerox Corporation
n.d. *American Doctoral Dissertations*. Ann Arbor: University Microfilms.
- Zuckerman, H.
1970 "Stratification in American science." Pp. 235-57 in E. O. Laumann (ed.), *Social Stratification*. Indianapolis: Bobbs-Merrill.

RESEARCH NOTES

CHANGES IN THE SEX ROLE ATTITUDES OF WOMEN, 1962-1977: EVIDENCE FROM A PANEL STUDY*

ARLAND THORNTON
University of Michigan

DEBORAH FREEDMAN
University of Michigan

American Sociological Review 1979, Vol. 44 (October):831-842

This paper documents a tremendous shift women have made towards more egalitarian sex role attitudes between 1962 and 1977. The shift toward egalitarianism was considerably more pronounced for the global items concerned with the general principles of role segregation and division of authority within the home than for more specific aspects of role specialization, such as the sharing of housework or the legitimacy of nonhome activities for mothers. In 1962 sex role attitudes bore no appreciable relation to a wide spectrum of individual characteristics. By 1977 many of these basic characteristics were related to sex role attitudes. Younger women, those with more education, those with better educated husbands, and those who were working in 1962 were more likely than others to adopt egalitarian sex role attitudes, while mothers of large families and fundamentalist Protestants tended to retain traditional attitudes. The experience of the women during the 1962 to 1977 intersurvey period also was associated with a shift in sex role attitudes. Additional education, work for pay, and exposure to divorce were associated with shifts toward egalitarian attitudes while additional births were associated with retaining traditional attitudes.

Introduction

Important changes have occurred both in family life and in the distribution of occupational roles in the United States. While men continue to specialize primarily in occupational roles outside the home, married women increasingly combine paid employment with traditional homemaker roles. The divorce rate has increased dramatically, fertility has declined sharply, age at marriage has risen, and there has been a general increase in edu-

cational attainment. Meanwhile, the women's movement has focused attention on the sex-based assignment of tasks, authority, and status with the goals of changing attitudes and providing a wider range of opportunities for women. A growing body of empirical evidence indicates that these changes have been accompanied by a general and pervasive shift in beliefs and values concerning appropriate roles for women (Bayer, 1975; Boyd, 1974; Erskine, 1970; Ferree, 1974; Mason et al., 1976; Monteiro, 1978; Parnes et al., 1975; Schreiber, 1978; Suter and Waite, 1975; Waite, 1978; also see Smuts, 1959 and Oppenheimer, 1970).

Although several cross-section studies have demonstrated that sex role attitudes differ across various groups in the population (Dowdall, 1974; Mason and Bumpass, 1975; Mason et al., 1976; Scanzoni, 1975; Shea et al., 1970; Thornton and Camburn, 1979; Waite and Stolzenberg, 1976), the extent to which changes in sex role attitudes have been uniform and pervasive across these various groups is not well understood. It also is not clear to what extent changes in sex role attitudes

* Direct all communications to: Arland Thornton; Institute for Social Research; The University of Michigan; Ann Arbor, MI 48106.

The data used in this paper were collected as part of a five-wave longitudinal study with the first four waves being collected under the direction of Ronald Freedman, David Goldberg, and Lolagene Coombs. The authors wish to thank those individuals for their contribution to this research. The fifth wave of interviews and the analysis reported here were supported by NICHD Grant HD-10407. The authors also acknowledge the contribution of the interviewing and coding staffs at the Survey Research Center and the computer staffs at the Survey Research Center and Population Studies Center, University of Michigan. Donald Camburn provided expert assistance during all stages of this project.

are associated with going back to school, going to work, bearing children, or experiencing a divorce, since the previous studies have used either cross-sectional data or panel data extending over relatively short time intervals (Angrist and Almquist, 1975; Ferber, 1977; Kim et al., 1973; Parelius, 1975; Spitze, 1978; Spitze and Waite, 1978). The research reported in this paper investigated the extent and nature of changes in sex role attitudes during a 15-year period of extensive change—1962 to 1977. The data, having been collected from the same women in 1962 and 1977, were particularly appropriate for this investigation.

Data

The data used for this research were collected between 1962 and 1977 from a sample of white women living in the Detroit metropolitan area who either had just married or had just had a first, second, or fourth birth. Approximately equal numbers of first, second, and fourth parity women and a somewhat smaller number of just-married women were sampled. Within strata, the women were chosen by simple random sampling from the birth and marriage records of the Detroit area. An initial personal interview, conducted during the winter of 1962 was followed by four telephone interviews—in the fall of 1962, in 1963, 1966, and 1977.

The response rates, both in the initial interview and follow-ups were excellent. During the first wave of the study, interviews were obtained from 1,304 women, representing a response rate of 92%. Of those 1,304 original respondents, full interviews were obtained in 1977 with 1,161 or 89%. A comparison of the 1977 sample with the original 1962 respondents indicated that the overall characteristics of the 1977 group were only slightly different from those of the original sample.

In the 1962 and 1977 interviews respondents were asked to respond to the following series of statements concerning the appropriate division of labor or authority between men and women.

Now, I would like to get your opinion on some matters concerning family life. I will

read you some statements, and I would like you to tell me if you strongly agree, agree, disagree, or strongly disagree. The first is:

1. Most of the important decisions in the life of the family should be made by the man of the house [Decisions].

2. It's perfectly alright [*sic*] for women to be very active in clubs, politics, and other outside activities before the children are grown up [Women Active].

3. A wife shouldn't expect her husband to help around the house after he's come home from a hard day's work [Housework].

4. There is some work that is men's and some that is women's, and they shouldn't be doing each other's [Men's/Women's Work].

Although the respondents were asked to respond in terms of one of the four agree-disagree categories, the few who insisted that they were undecided, did not know, or that "it depends" were coded into a fifth category.¹

The first question, measuring attitudes toward the division of authority and decision making in the family, indicated the extent to which the respondent supported the traditional notion that men should have more authority in the making of family decisions. The other three questions reflected attitudes toward the division of family and occupational roles between men and women. They indicated appropriate behavior for women (Women Active), for men (Housework), or for both men and women (Men's/Women's Work), and all referred to the appropriateness of the separation and segregation of roles by sex.

¹ The same questions were asked during the 1962 personal interview and the 1977 telephone interview. However, since it is more difficult in a telephone interview to sense whether the respondent fully understands the questions, it seemed advisable to make two minor modifications to clarify the questions and the prescribed response categories. First, as part of the first statement about family decision making, the interviewer repeated the phrase from the introductory paragraph: "Would you say you strongly agree, agree, disagree, or strongly disagree?" Second, in the third and fourth statements the contraction "shouldn't" was changed to "should not." It is our opinion that these changes did not affect the meaning of the questions nor the response pattern, but served to make the stimulus provided by the telephone interview closer to that provided in the original personal interview. The percentage giving do not know or depends responses varied from 1 to 7% in 1962 and from 2 to 11% in 1977.

Changes in Levels

Table 1 shows the distribution of responses for the four sex role attitude items for both 1962 and 1977. The first bank of numbers indicates the percentage giving a nontraditional response. These numbers were estimated by classifying as nontraditional or egalitarian all respondents who either agreed or strongly agreed with the nontraditionally worded item (Women Active) and all those who disagreed with the traditionally worded items (Decisions, Men's/Women's Work, Housework). All others, including those giving do not know responses, were coded as traditional or conservative, thus collapsing the spectrum of responses into a dichotomy. For the second bank of numbers the entire distribution from strongly agree to strongly disagree was ordered on a five-point scale with undecided and do not know responses being assigned a middle value of three. All items were ordered so that a high score indicated an egalitarian response while a low score indicated a traditional orientation. In addition, a summary index was created by adding together the four individual questions.

Table 1 clearly demonstrates a shift toward egalitarian sex role attitudes between 1962 and 1977. The percentage giving a nontraditional response in 1962 ranged from 32 to 56%. By 1977, these percentages had increased between 16 and 35 percentage points, with 60 to 77% of the women giving liberal responses at that time (cols. 1 to 3 of Table 1). The changes in the mean scores (cols. 5 and 6 of Table 1) also indicate a substantial increase in nontraditional orientations during the 15 years. In fact, the increases in means (col. 7) amounted to .43 to .81 standard deviations, reflecting considerable change during this 15-year period.

Although all the attitudes shifted toward egalitarianism during the 15 years, the magnitude of the increases varied. The largest change occurred for Decisions; the percentage giving a liberal response increased by 35 percentage points (from 32 to 67%) while the mean increased by .99 (from 2.52 to 3.51). Next largest was the change in Men's/Women's Work where the nontraditional response increased by 22 percentage points for the dichotomy and .67 on the five-point scale. The in-

Table 1. Distribution of Sex Role Attitudes: 1962 and 1977

	Distributions on Nontraditional- Traditional Dichotomy ^a (Percentage Given a Nontraditional Response)				Means and Standard Deviations Using the Five-Point Attitude Scale ^b				
	1962	1977	1962-1977 increase to 1977 increase	1962-1977 relative to possible increase ^c	1962 Mean	1977 Mean	1962-1977 increase to 1977 increase	1962 relative to possible increase ^d	1962 standard deviation ^e
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decisions	32.5	67.3	34.8	.51	2.52	3.51	.99	.40	1.22
Women Active	42.5	60.5	18.0	.31	2.85	3.33	.48	.22	1.11
Housework	45.8	62.1	16.3	.30	2.90	3.46	.56	.27	1.15
Men's/Women's Work	55.5	77.4	21.9	.49	3.10	3.77	.67	.35	1.12
Sex Role Index	—	—	—	—	11.36	14.07	2.71	—	2.69

Number of Respondents: 1158.

^a Respondents agreeing or strongly agreeing with Women Active or disagreeing or strongly disagreeing with Decisions, Housework, and Men's/Women's Work were coded as nontraditional. All others, including those giving do not know responses were coded as traditional.

^b Responses were coded on a five-point scale from one to five with a high score indicating a nontraditional response and a low score a traditional response. For Sex Role Index, the four single items were summed together.

^c (1977 percentage - 1962 percentage) ÷ (100 - 1962 percentage).

^d (1977 mean - 1962 mean) ÷ (5 - 1962 mean).

^e The 1977 standard deviations were quite similar to those in 1962.

crease for the other two questions was somewhat lower, though still substantial.

Of course, the extent of the possible shift towards egalitarianism depends partly on the degree of traditionalism in 1962; the more traditional the 1962 attitudes, the greater the possible change. Columns 4 and 8 of Table 1 list the 1962 to 1977 change relative to the amount of change possible, given the 1962 distribution. From this perspective, Decisions and Men's/Women's Work changed considerably more than did Women Active and Housework. Similar results were obtained when the changes in mean scores were compared with the 1962 deviations. Again, the relative shifts for Men's/Women's Work and Decisions were considerably more pronounced than for the other two items, with the change for Decisions being almost as large as its standard deviation.

How can these differential shifts be explained? These data show more movement towards rejection of sex segregation as a general principle than towards rejection of specific forms of segregation. Apparently the impetus of the change has been directed more towards general and global orientations than toward specific aspects of role specialization. Although these women increasingly have rejected the general principle that men should have more prerogatives than women, their experience within the family and with the practical aspects of allocating household work may have mediated their thinking about specific activities. This speculation is based on the fact that Men's/Women's Work is a strong statement legitimizing the general principle of segregation of men's and women's roles while Decisions strikes at the heart of who runs the house—whether or not that is the man's prerogative. The other two attitudes, Women Active and Housework, refer to very specific activities of men and women with which the respondents have had considerable practical experience. Confidence in this distinction between general and specific attitudes is buttressed by other research (Boyd, 1974; Monteiro, 1978) which has found a greater degree of change in general orientations than in more specific sex role attitudes.

Subgroup Differences in 1962

Table 2 shows the relationships between the 1962 sex role attitude summary index² and several of the 1962 background characteristics, including the respondent's education, age, religion, employment experience, and parity as well as her husband's education and 1961 income. Both zero-order or unadjusted relationships and relationships adjusted by Multiple Classification Analysis (MCA), a form of dummy variable regression (Andrews et al., 1973)³ are shown.

Overall, the relationships between the 1962 sex role attitudes and the background characteristics were either small or

² A preliminary analysis which investigated the possibility of the four individual sex role items being indicators of one underlying construct showed that no simple model adequately could account for the observed pattern of relationships between the four individual variables. Therefore, the analysis investigated the relationships between the independent variables and sex role attitudes separately for the four individual variables rather than using the four variables as indicators of an underlying unmeasured concept. Nevertheless, the relationships between the independent variables and the four individual sex role items were sufficiently similar that the relationships for the summary index adequately represented the patterns for the four individual variables. To simplify the presentation of results, we present only summary index data in Tables 2 and 3, but where variations exist in the pattern of relationships for particular sex role items, these differences are noted in the text.

³ While it would have been possible to conduct the analysis using ordinary multiple regression, the use of ordinary regression would have necessitated the use of a considerable number of dummy variables since several of the explanatory variables were measured at the categorical rather than interval level. Therefore, it was decided to convert all of the explanatory variables to a nominal level and use MCA. MCA also has the advantage of allowing for nonlinearities in functional form. In the tables Eta square (E^2) is the zero-order correlation ratio, showing the amount of variance in the dependent variable (sex role attitude) explained by each independent variable before adjusting for any other variable. Beta square (B^2) is analogous to eta square but reflects the adjustments of the multivariate analysis. While eta square is the percentage reduction in variation accomplished by measuring variation around the unadjusted subgroup means rather than around the overall or grand mean for that dependent variable, beta square indicates the reduction that would occur if variation were measured around the adjusted means rather than the overall or grand mean (see Andrews et al., 1973).

Table 2. Multiple Classification Analysis of the 1962 Sex Role Attitude Summary Index^a

	N	Unadjusted	Adjusted
<i>Wife's Education</i>			
Less than high school	241	11.14	11.11
High school graduate	654	11.33	11.35
Some college	157	11.41	11.41
College graduate	106	12.02	11.94
E ² or B ²		.007 ^b	.006
<i>Husband's Education</i>			
Less than high school	292	11.45	11.59
High school graduate	435	11.32	11.47
Some College	214	11.06	11.03
College graduate	217	11.62	11.16
E ² or B ²		.004	.006
<i>Age</i>			
15-19	139	10.45	10.73
20-24	483	11.31	11.37
25-29	297	11.72	11.65
30-34	195	11.55	11.39
35-39	44	11.61	11.26
E ² or B ²		.020	.010
<i>Religion</i>			
Protestant			
Fundamentalist	128	11.29	11.39
Nonfundamentalist	341	11.48	11.47
Catholic	628	11.28	11.26
Jewish	38	12.61	12.54
E ² or B ²		.011	.009
<i>Number of Children</i>			
0	169	10.80	10.63
1	339	11.22	11.31
2	326	11.49	11.49
4	324	11.68	11.68
E ² or B ²		.012	.015
<i>Work Experience</i>			
Currently working			
in 1962	191	11.76	12.10
Not currently working			
but worked			
since marriage	682	11.36	11.25
Not currently, and			
not since marriage,			
but has worked	213	11.22	11.16
Never worked	72	10.76	11.04
E ² or B ²		.007	.015
<i>Husband's Income</i>			
Less than \$3,000	137	11.33	11.57
\$3,000-4,999	245	11.19	11.34
\$5,000-6,999	413	11.27	11.24
\$7,000-8,999	219	11.57	11.44
\$9,000 and over	144	11.63	11.44
E ² or B ²		.004	.002
Adjusted R ²			.035

^a The adjusted means were obtained from an MCA equation including all of the variables listed above. The mean for the total sample was 11.36.

^b For the rows labelled E² or B², the E² figure is noted in the Unadjusted columns, while B² is noted in the Adjusted columns.

nonexistent. Both the differences in the means (unadjusted and adjusted) and the amount of variance in the sex role atti-

tudes accounted for by the independent variables support this conclusion.

While the overall relationships in 1962 were meager, a few differences are noted. There was a small relationship between the respondent's education and 1962 attitudes, with the better educated having somewhat more egalitarian attitudes. The very young women were substantially more traditional than others. This may reflect the restriction of our sample to married women since those marrying young probably are drawn disproportionately from those with more traditional attitudes. The only noticeable and consistent religious differential was between Jewish women and all others, with Jewish women being more egalitarian. Contrary to expectations, there was a small positive association between parity and nontraditional attitudes. While the childless women were the most traditional on every measure, the largest positive association between parity and egalitarian attitudes was for the Housework and Men's/Women's Work items which may reflect the fact that women with large families have more demands on their time and may need more assistance from their husbands. Finally, women who were working at the time of the 1962 interview were the most egalitarian, while those who had never worked or who had worked only before marriage were the most traditional.

Attitudinal Change between 1962 and 1977: Which Groups Were Affected?

Table 1 documents a substantial increase in egalitarian sex role attitudes between 1962 and 1977—an increase of 2.71 points on the sex role attitude summary index for the total sample. A more detailed analysis investigated whether or not this change was pervasive across various subgroups of the population or was limited to particular groups. Two sets of variables were used to define subgroups. The first set included the group of characteristics measured in 1962 and examined earlier in Table 2. The second set included the following experiences of the women between 1962 and 1977: a crude index of the amount of time worked during the intersurvey period; the number of children

born; whether or not the woman had obtained any additional education⁴ during those years; and her 15-year marital history—including experience, if any, with divorce, widowhood, and remarriage. This analysis indicates that the change shown in Table 1 was very pervasive; every group examined registered increases in egalitarianism (data not shown).

While all of the subgroups experienced increases in egalitarianism, there were important differences in the amount of change. The analysis of subgroup differences used three different models as documented in Table 3. In Model 1, a series of MCA equations were estimated with the 1977 summary index as the dependent variable and the 1962 summary index and a *single* explanatory variable as the independent variables. For the subgroups of each explanatory variable, the deviations from the overall 1977 mean were estimated adjusting for the 1962 attitudes of each subgroup. Since the 1962 sex role index was included in each equation along with the specific explanatory variable, these deviations represent the difference between the amount of change for each particular subgroup and the average change in attitudes for the entire sample which was 2.71. Thus, with the 1962 index controlled, subgroup deviations represent differential change during the intersurvey period associated with particular characteristics.⁵

In the second and third models, MCA equations were estimated with the 1977 sex role index as the dependent variable and the 1962 index and *several* explanatory variables as the independent variables. In Model 2 the 1962 characteristics were included as explanatory variables while both the 1962 characteristics and the intersurvey experiences were included in Model 3. Thus, Model 2 shows the extent to which each 1962 subgroup changed differentially net of the influence of all

Table 3. Multiple Classification Analysis of the 1962–1977 Changes in the Sex Role Attitude Summary Index^a

		Subgroup Deviations from Mean Sample Change		
	N	Model 1	Model 2	Model 3
<i>Wife's Education</i>				
Less than high school	241	-.95	-.64	-.51
High school graduate	654	-.11	-.06	-.03
Some college	157	.79	.56	.37
College graduate	106	1.67	1.00	.78
B ²		.062	.026	.015
<i>Husband's Education</i>				
Less than high school	292	-.74	-.32	-.40
High school graduate	435	-.30	-.20	-.15
Some College	214	.25	.04	-.04
College graduate	217	1.35	.79	.89
B ²		.061	.018	.023
<i>Age</i>				
15-19	139	.60	1.22	.87
20-24	483	.40	.37	.25
25-29	297	-.28	-.42	-.30
30-34	195	-.68	-.86	-.59
35-39	44	-1.33	-1.31	-.86
B ²		.032	.055	.027
<i>Religion</i>				
Protestant				
Fundamentalist	128	-1.13	-.96	-.89
Nonfunda- mentalist	341	.17	.05	-.08
Catholic	628	.03	.11	.19
Jewish	38	1.23	.41	.15
E ² or B ²		.026	.015	.014
<i>Number of Children</i>				
0	169	.50	-.27	.06
1	339	.50	.15	.24
2	326	-.06	.11	.05
4	324	-.73	-.12	-.33
E ² or B ²		0.30	.003	.006
<i>Work Experience</i>				
Currently working in 1962	191	.69	.45	-.02
Not currently working but worked since marriage	682	-.11	-.08	-.04
Not currently, and not since marriage, but has worked	213	-.18	-.11	.06
Never worked	72	-.28	-.14	.23
B ²		.011	.005	.001
<i>Husband's Income</i>				
Less than \$3,000	137	.40	.08	.08
\$3,000-4,999	245	-.37	-.45	-.44
\$5,000-6,999	413	-.13	.05	-.01
\$7,000-8,999	219	-.07	-.06	.00
\$9,000 and over	144	.73	.63	.70
B ²		.014	.011	.012

⁴ This includes skill training but not domestic classes like sewing and cooking.

⁵ An alternative approach would have been to use the difference between 1977 and 1962 sex role attitudes as the dependent variable. This approach, however, would have created a negative correlation between 1962 attitude and change between 1962 and 1977—a compelling disadvantage.

Table 3. Continued

	N	Subgroup Deviations from Mean Sample Change		
		Model 1	Model 2	Model 3
<i>1962-1977 Education</i>				
No	742	-.59	—	-.35
Yes	416	1.05	—	.62
B ²		.072		.025
<i>1962-1977 Work Experience</i>				
No work	197	-1.10	—	-.90
Less than one year	174	-.26	—	-.24
1-2.5 years	208	.05	—	.04
2.5-4.0 years	209	.22	—	.13
4.0-8.5 years	192	.66	—	.53
8.5 years or more	146	.41	—	.43
B ²		.038		.027
<i>1962-1977 Fertility</i>				
0	268	-.44	—	.08
1	314	.16	—	.22
2	300	-.08	—	-.24
3	162	.22	—	-.02
4 or more	114	.06	—	-.14
B ²		.007		.004
<i>1962-1977 Marriage Experience</i>				
Stably married	908	-.09	—	.01
Widowed	44	-.55	—	-.68
Divorced; remarried	90	.51	—	.18
Divorced; not remarried	116	.53	—	.07
B ²		.008		.002
<i>Average change for total sample equals 2.71</i>				

* All numbers shown in the table were estimated using MCA equations with 1977 sex role attitudes as the dependent variable. The Model 1 deviations were estimated from multiple MCA equations with the specific explanatory variable in question and the 1962 sex role attitude summary index as independent variables. The Model 2 deviations were estimated using an MCA equation containing all of the 1962 background variables and 1962 sex role attitudes as independent variables. In Model 3 the variables representing intersurvey experiences were added to the equation used in Model 2. Since 1962 sex role attitudes were included in all of the equations, thereby taking them into account, the results should be interpreted as reflecting subgroup differences in change between 1962 and 1977 rather than showing subgroup differences in 1977 attitudes. All numbers in the table represent the extent to which each subgroup deviated from the change for the total sample (subgroup change minus total group change). Only B² values (instead of both E² and B²) are reported since all values were estimated using MCA equations.

other 1962 variables. Model 3, which incorporates intersurvey experience, will be discussed later in the paper.

Looking first at wife's education, we noted substantial differences in change across educational groups (Table 3). The

difference between the Model 1 deviations for the least and most educated groups was 2.62—a considerable difference, given that the 1962 standard deviation of the summary index was 2.69. In addition, there were considerable differences between the Model 2 deviations, which take into account the other 1962 variables in the multivariate analysis. The positive association between education and the amount of change could reflect the access of well educated women to economically and psychologically rewarding jobs which encourage both participation in the labor force and the development of egalitarian attitudes. In addition, well educated men and women probably have constituted the biggest audience for the recent upsurge in publicity about sex roles (Cancian, 1975; Schreiber, 1978).

There also was a positive relationship between husband's education and sex role attitude change. The women with educated husbands were more likely than others to adopt egalitarian attitudes between 1962 and 1977. This correlation between husband's education and attitudinal change can not be attributed to the intercorrelation between husband's and wife's educations since the wife's education was controlled in the analysis.

The age differences in change between 1962 and 1977 were substantial, with younger women changing more than others. In fact, the youngest group of women (15-19), the most traditional in 1962, changed enough during the 15 years so that by 1977 they (together with the second youngest age group) were the least traditional. The Model 2 deviations, which adjusted for other 1962 characteristics, show an even larger negative relationship between age and change. Apparently young women are more amenable to adopting new roles and attitudes during periods of change. This may occur because they have had less socialization and experience in traditional roles and are faced with making life-time decisions about work and family. Older women, on the other hand, probably are more thoroughly socialized to accept traditional role proscriptions and, having made a considerable investment in traditional patterns, are less motivated to reexamine their defi-

nitions and beliefs during a period of change.

In observing trends over time in a panel study, it is useful to consider if the changes occurred because the times and conditions changed or because the panel members grew older, with later life stages being associated with different attitudes. While it is very difficult to separate cohort, aging, and time effects, these data provide some insights. If the change between 1962 and 1977 had been the result of the women becoming 15 years older, one would expect the older women to be the most liberal in both years. However, age was not positively related to egalitarian attitudes in 1962, and the relationship was negative in 1977. These observations give credence to the hypothesis that the aggregate changes associated with age were due to time changes rather than to maturational effects. Further support comes from previously cited research studies which, using data from multiple cross sections with similar age compositions, found substantial changes over time in sex role attitudes.

Attitudinal shifts between 1962 and 1977 did not affect all religious groups equally. The fundamentalist Protestants exhibited the most distinctive pattern. While their attitudes were very similar to those of other women in 1962, their attitudes subsequently diverged markedly so that by 1977 they had the lowest score. The difference between this group and each of the other religious groups in the amount of change on the summary index ranged from 1.01 to 1.37 (Model 2, Table 3)—considerable differences when compared with the standard deviation (2.69) of the summary index in 1962. Thus, fundamentalist Protestants appear to have taken a more conservative and traditional approach to changing sex roles than others (also see Brady and Tedin, 1976).

Only one other notable change pattern was associated with religion, a differential shift among Jewish women almost entirely attributable to their change on the decision-making item. By 1977 virtually all of the Jewish women disagreed with the statement that the important decisions of the family should be made by the man of the house. For the other attitudinal

items, Jewish women still tended to be egalitarian, as in 1962, but their degree of change was not marked.

As expected, the women with larger families in 1962 changed less during the 15 years between 1962 and 1977 than did others (Model 1, Table 3). However, the inclusion of other variables, particularly age and education in the Model 2 analysis, greatly altered the observed differences, with the relationship becoming small and somewhat U-shaped. Apparently, the higher parity women experienced less change primarily because they were older and less educated. However, one important exception was that mothers with large families in 1962 changed less on the Women Active item even with controls for other variables (results not shown). Having many children appears to inhibit the adoption of liberal attitudes toward women's outside activities.

For 1962 work experience, the only important difference in attitudinal change was between those who were working in 1962 as against all others.

Husband's 1961 income was not monotonically related to attitudinal change. Instead, a slight U-shaped relationship was apparent in the amount of change between 1962 and 1977. Several different proxies of family financial status and well-being were investigated, including husband's relative income (actual divided by expected income as based on occupation, education, and age), the wife's evaluation of the sufficiency of his income, and 1962 assets. None of these measures displayed a substantial relationship with either 1962 attitudes or change between 1962 and 1977 (results not shown).

Intersurvey Experiences: Their Relationship to Attitudinal Change

In the Model 3 analysis of differential change between 1962 and 1977 (Table 3), the four intersurvey experiences—work, childbearing, additional education, and marital experience—were included in the multivariate analysis along with the variables measured as of 1962. The inclusion of the intersurvey experiences permitted an investigation of the extent to which

they were related to attitude change during the same period. In addition, the Model 3 analysis permitted the examination of the degree to which the differential changes in attitudes for the various 1962 subgroups were the result of the differing experiences of these groups with regard to working, education, fertility, and marital disruption between 1962 and 1977.

Intersurvey experience with labor force participation, additional education, and marital disruption were all associated with shifts towards egalitarian sex role attitudes (Model 3, Table 3). As expected, women who acquired additional education and those with more years of work shifted more towards egalitarianism than others, with fairly sizeable differences. Since it was expected that job status and job quality also might be related positively to attitudinal change, an additional analysis incorporated these other dimensions of work experience. However, attitudinal change correlated more with the amount of work than with the prestige of the job (measured by Duncan SES scores) while variables which combined both the prestige dimension and the number of hours worked produced only slightly higher correlations than those obtained with hours of work alone. Labor force participation appears to foster nontraditional attitudes by providing experience outside the home with its accompanying exposure to egalitarian ideas. Nonhome experience appears to be the important labor force correlate with attitudinal change rather than the nature of the particular job.

There were surprisingly small relationships between sex role attitude change and both childbearing and divorce experience. The small effects of divorce may represent an averaging of two opposite reactions by divorcees. Since divorce can be an embittering experience for a woman, it could have a radicalizing effect on her ideas about appropriate sex roles. Alternatively, the difficult financial and emotional circumstances of many divorced women could lead them to idealize traditional roles. The relatively small shift towards egalitarianism among widows is consistent with the second possibility.

Childbearing experience since 1962 was

related negatively to attitudinal change, but after controlling for 1962 characteristics and other intervening experiences, the relationships became meagre and irregular. We had expected women bearing more children to retain traditional views, which provide validation for their chosen life patterns. Perhaps their unexpected egalitarianism reflects a continuing need for help from their husbands in the home.

Note that the observations reported in Table 3 show the *net* relationship between intervening experience and attitudinal change. While there were relationships between 1962 attitudes and intervening experiences (which are beyond the scope of this paper), those associations were controlled by the inclusion of 1962 attitudes in the multivariate analysis. Therefore, the MCA data reflect associations between the intervening experiences and attitudinal change *net* of attitudinal levels in 1962.

Although the observed relationships between intervening events and attitudinal change were not due to selection on 1962 attitudes, conclusions about the direction of causality are more problematic. It is not clear if the attitudinal change caused the experiences during the 15 years or if the experiences caused the attitude change, since we do not know when the sex role attitudes changed, but only the overall differences between 1962 and 1977. A more detailed planned analysis, which takes into account plans in 1962 and the timing of the intervening experiences, should provide some insights concerning the nature of the causal forces.

Since intersurvey experience was associated with sizeable shifts toward egalitarian attitudes, an important question is the extent to which the 1962 groups became more egalitarian over time because they had such experiences between 1962 and 1977. For most of the 1962 subgroups, the answer is negative; the differential changes in attitudes were mostly independent of these intersurvey experiences. The analysis of attitudinal change between 1962 and 1977 which included all the 1962 independent variables together with the intersurvey experiential variables, produced, with some exceptions, substan-

tially the same array of adjusted deviations for the 1962 subgroups as did the similar analysis without the intersurvey experience (compare Models 2 and 3 of Table 3). Apparently, for most of the 1962 subgroups, the differential attitudinal change between 1962 and 1977 did not result from these kinds of differential experiences during the intersurvey period.

Intersurvey experience, however, did mediate the effect of age and 1962 labor force experience on attitudinal change. The correlation between age and attitudinal change was substantially smaller in Model 3, which included the intervening experiences, than in the equation excluding those variables (Model 2). Thus, one reason the younger women changed more was their greater exposure to experiences conducive to attitudinal change. A separate analysis found that the younger women were more likely than others to obtain additional education, to work more, and to have more experience with divorce. However, these experiences cannot entirely account for the differential changes between the young and old since substantial differences persisted even after adjusting for the intervening experiences (see Model 3).

The intersurvey experience variables entirely account for the relationship between work experience as of 1962 and attitudinal change between 1962 and 1977. A separate analysis showed that women working in 1962 were more likely than others to obtain additional education, to work many hours, to have few children, and to obtain a divorce during the intersurvey period. After allowing for the added effect of these intersurvey experiences, women working in 1962 experienced no more change over time than women with lesser work experience.

Summary

This paper documents the tremendous shift among women towards more egalitarian sex role attitudes between 1962 and 1977. Whereas in 1962 32 to 56% of the respondents gave egalitarian responses concerning various sex role attitudes, by 1977 these percentages ranged from 60 to 77%. This trend towards egalitarian sex

role attitudes cannot be explained by the maturation of these women; age was not related positively to egalitarian attitudes at either date. Thus, the attitudinal shift over the 15-year period reflects changing conditions between 1962 and 1977.

The shift towards egalitarianism is considerably more pronounced for the global items concerned with the general principles of role segregation and division of authority within the home, than for the more specific aspects of role specialization, such as the sharing of housework or the legitimacy of nonhome activities for mothers. One possible explanation could be that the general trend towards more egalitarian attitudes about appropriate roles for men and women becomes somewhat tempered when specific activities are concerned—activities with which these women have been involved for a considerable number of years. This group of women, aged 15–39 in 1962, had their children during the baby boom; and although most of them have worked some time during their life, only 50% have worked 2½ years or more during the past 15 years. This group, like most mothers during the baby boom, spent most of their married lives taking care of the home and children while their husbands supported the family. The realities of allocating work and home responsibilities undoubtedly have made them more aware of the problems involved in shifting responsibilities with regard to specific home tasks even though they may, in principle, support equal prerogatives for men and women as well as more equal sharing of family and occupational roles. Since the survey data showed that these women performed most of the home and child care tasks, their lesser shift on attitudes regarding specific tasks may reflect the actual sex role division within their households.

In 1962, sex role attitudes bore only slight relation to a wide spectrum of individual characteristics, including age, education, religion, number of children, work experience, husband's education, and husband's income. Many of these basic characteristics, however, were important determinants of the extent of attitudinal change between 1962 and 1977. Younger women, those with more education, those

with better educated husbands, and those who were working in 1962 were more likely than others to adopt egalitarian sex role attitudes, while mothers of large families and fundamentalist Protestants tended to retain traditional sex role attitudes. With the differential change between 1962 and 1977, many of these background variables were correlated with 1977 sex role attitudes. These data support previous research findings (Boyd, 1974; Ferree, 1974; Schreiber, 1978) that differentials in sex role attitudes across population subgroups is an emergent phenomenon. Apparently, the events of the last 15 years have both liberalized sex role attitudes and have altered their relationships with several social and demographic variables.

The experiences of the women during the 1962 to 1977 intersurvey period were associated with shifts in sex role attitudes. Additional education and paid employment were associated with a marked shift toward egalitarianism; divorce was associated with a small egalitarian shift; and additional births were correlated with retaining traditional attitudes. Although our inability to pinpoint the timing of employment, education, and changes in sex role attitudes during the interim period precludes the identification of the causal mechanisms producing the observed associations, it is likely that at least some of the relationship was caused by additional education and work influencing sex role attitude change.

While the characteristics and experiences of the women were related to the amount of attitudinal change between 1962 and 1977, they certainly did not account for the magnitude of the shift. The changes in sex role attitudes were not limited to certain groups of women, but were pervasive throughout society. The events of the past 15 years have been of such magnitude and importance that they have affected all groups of women irrespective of their experiences and characteristics.

REFERENCES

- Andrews, Frank, James N. Morgan, James A. Sonquist, and Laura Klem
1973 Multiple Classification Analysis. Ann Arbor: Institute for Social Research, University of Michigan.
- Angrist, Shirley S. and Elizabeth M. Almquist
1975 *Careers and Contingencies*. New York: Dutton.
- Bayer, Alan E.
1975 "Sexist students in American colleges: a descriptive note." *Journal of Marriage and the Family* 37:391-7.
- Boyd, Morica
1974 "Equality between the sexes: the results of Canadian Gallup polls, 1953-1973." Paper presented at the annual meeting of the Canadian Sociology and Anthropology Association.
- Brady, David and Kent Tedin
1976 "Ladies in pink: religion and political ideology in the anti-ERA movement." *Social Science Quarterly* 56:564-75.
- Cancian, Francesca M.
1975 "Mass media coverage of women: changes from 1965-74." Unpublished paper, Department of Sociology, Stanford University.
- Dowdall, Jean
1974 "Factors associated with female labor force participation." *Social Science Quarterly* 55:121-30.
- Erskine, Fazel
1970 "The polls: women's roles." *Public Opinion Quarterly* 34:275-90.
- Ferber, Marianne A.
1977 "Labor market participation of young married women: causes and effects." Unpublished paper. University of Illinois.
- Ferree, Myra M.
1974 "A woman for president? changing responses 1958-1972." *Public Opinion Quarterly* 38:390-9.
- Kim, Sookon, Roger D. Roderick, and John R. Shea
1973 *Dual Careers: A Longitudinal Study of Labor Market Experience of Women*, Vol. 2. Manpower Research Monograph No. 21. Washington, D.C.: U.S. Government Printing Office.
- Mason, Karen O. and Larry L. Bumpass
1975 "U.S. women's sex-role ideology, 1970." *American Journal of Sociology* 80:1212-9.
- Mason, Karen O., John L. Czajka, and Sara Arber
1976 "Change in U.S. women's sex-role attitudes, 1964-1974." *American Sociological Review* 41:573-96.
- Monteiro, Lois A.
1978 "Change and stability: attitudes toward women's role and abortion—1970 to 1975." Paper presented at the annual meeting of the Population Association of America, Atlanta.
- Oppenheimer, Valerie K.
1970 *The Female Labor Force in the United States*. Berkeley: Institute of International Studies, University of California.
- Parelius, Ann P.
1975 "Emerging sex-role attitudes, expectations, and strains among college women." *Journal of Marriage and the Family* 37:146-53.
- Parnes, Herbert S., Carol L. Jusenius, Francine

- Blau, Gilbert Nestel, Richard Shortlidge, Jr., and Steven Sandell
 1975 *Dual Careers: A Longitudinal Analysis of the Labor Market Experience of Women*. Columbus: Center for Human Resource Research, Ohio State University.
- Scanzoni, John
 1975 *Sex Roles: Life Styles and Childbearing*. New York: Free Press.
- Schreiber, E. M.
 1978 "Education and change in American opinions on a woman for president." *Public Opinion Quarterly* 42:171-82.
- Shea, John R., Ruth S. Spitz and Frederick A. Zeller
 1970 *Dual Careers: A Longitudinal Study of Labor Market Experience of Women*, Vol. 1. Manpower Research Monograph No. 21. Washington, D.C.: U.S. Government Printing Office.
- Smuts, Robert W.
 1959 *Women and Work in America*. New York: Columbia University Press.
- Spitze, Glenna D.
 1978 "Role experiences of young women: a longitudinal test of the role hiatus hypothesis." *Journal of Marriage and the Family* 40:471-9.
- Spitze, Glenna D. and Linda J. Waite
 1978 "Young women's early labor force experiences and work attitudes." Paper presented at the annual meeting of the Population Association of America, Atlanta.
- Suter, Larry E. and Linda J. Waite
 1975 "Changes in fertility expectations of young women: evidence from longitudinal data." Paper presented at the annual meeting of the American Sociological Association, San Francisco.
- Thornton, Arland D. and Donald P. Camburn
 1979 "Fertility, sex role attitudes, and labor force participation." *Psychology of Women Quarterly*. In press.
- Waite, Linda J.
 1978 "Projecting female labor force participation from sex-role attitudes." Paper presented at the annual meeting of the American Sociological Association, San Francisco.
- Waite, Linda J. and Ross M. Stolzenberg
 1976 "Intended childbearing and labor force participation of young women: insights from nonrecursive models." *American Sociological Review* 41:235-52.

A PANEL MODEL OF CRIME RATES AND ARREST RATES*

DAVID F. GREENBERG
New York University

RONALD C. KESSLER
University of Michigan

CHARLES H. LOGAN
University of Connecticut

American Sociological Review 1979, Vol. 44 (October):843-850

In this paper, panel models for crime rates and arrest rates are utilized to separate the effect of law enforcement from several other processes that have been advanced as possible determinants of an enforcement-crime relationship. When models of this type are estimated for official index crime rates in a sample of U.S. cities for the years 1964-1970, no meaningful relationship between arrest rates and crime rates is found. This finding permits us to exclude the existence of any appreciable deterrence effect.

A decade ago, research interest in crime deterrence was revived by two studies that reported significant negative relationships between geographically aggregated crime rates for some index offenses and measures of the certainty and severity of imprisonment (Gibbs, 1968; Tittle, 1969). Since then numerous investigators have continued to interpret correlations between crime rates and various measures of law enforcement activity as evidence for the existence of a deterrent effect.¹ It is equally plausible, however, that these correlations reflect the effect of crime rates on law enforcement, or the effect of other variables on both rates.

* Direct all communications to: David F. Greenberg; Department of Sociology; New York University; New York, NY 10003.

Authors' names are listed alphabetically. We gratefully acknowledge the assistance of Betty Sheets, Walt Harrison and Andrew Rollings in carrying out the computations. Howard Erlanger, Franklin Fisher and Daniel Nagin supplied helpful comments on an earlier draft. We thank the Uniform Crime Reporting Division of the F.B.I. for supplying data on arrest rates and crime rates to Charles Logan. We are also grateful to the F.B.I. for refusing to give David Greenberg the same data, thereby making this collaboration possible. We wish to note with concern, however, the danger to scholarly inquiry posed by this sort of selectivity in the release of data by government agencies. Part of this research was funded by a grant from the Russell Sage Foundation to David Greenberg. Support was also received under Grant No. 79-NI-AX-0054 from the National Institute of Law Enforcement and Criminal Justice. Points of view are those of the authors and do not necessarily reflect the position of the U.S. Department of Justice.

¹ For a recent review of this voluminous literature see Nagin (1978).

The impact of crime on enforcement practices can come about in at least two ways. (1) Higher crime rates could tend to saturate crime control capabilities that are fixed in the short run. Thus when crime rates increase, police resources may be stretched thin, reducing the probability of an arrest following an offense. When the number of arrests increases, prosecutors and judges faced with larger caseloads may dismiss more cases and accept plea bargains more favorable to the defendant. If the number of commitments to prison leads to overcrowded prisons, parole authorities may release prisoners earlier than usual, reducing the average length of sentence served in prison. (2) Crime rates could influence enforcement through their effect on attitudes toward crime. It is possible that high crime rates create habituation to crime and hence lower penalties; on the other hand, high crime rates might tend to increase public fear of crime and thus lead to more punitive or efficient enforcement measures.

It is important to note that these two potential effects of crime on enforcement differ not only in the time span over which they are likely to be felt but, more importantly, in their signs as well. The saturation effect, which will tend to reduce enforcement efficiency as crime increases, will be felt almost at once, while the influence of the crime rate on public demand for punishment could tend to increase enforcement efficiency as crime rates rise. However, this effect will not be felt immediately, but will lag behind the crime

rate, both because public recognition generally lags behind "objective" indicators of social problems, and because it usually takes time for public concern to be translated into enforcement policy.

As for the impact of enforcement practices on crime, the period of time over which the influence is expected is uncertain. The deterrent, restraining, rehabilitative and stigmatizing effects of enforcement could all occur on both a short-term and long-term basis. Here, however, there is less reason to expect these effects to be of opposite sign.

Alternative Methods of Estimating Reciprocal Influences

All but a handful of studies of the effect of law enforcement on crime have employed cross-sectional designs; the more sophisticated of these studies have used simultaneous equation methods for separating the effect of crime on punishment from the effect of punishment on crime (Ehrlich, 1973; Greenwood and Wadychi, 1973; Mathiesen and Passell, 1976; Orsagh, 1973). However, in these analyses, lagged effects are absorbed into later measures of enforcement and crime. If these effects are of opposite sign, as we have suggested the effect of crime on enforcement is expected to be, they will tend to cancel and lead to an underestimation of the influence of crime on enforcement. To avoid this possible source of bias, a model of the effects of crime on enforcement must include both short-term and long-term effects.

A second difficulty is also inherent in this approach. To separate the two influences of the rates from one another, we must include some outside predictor variables in the model and use them as instruments, by fixing a priori the partial regression coefficients of the predictors with the criterion score at some prespecified value.² However, this proce-

sure is highly sensitive to misspecification; should these identification restrictions be in error, the estimation of effects will again be biased, perhaps grossly (Fisher and Nagin, 1978; Greenberg, 1977).

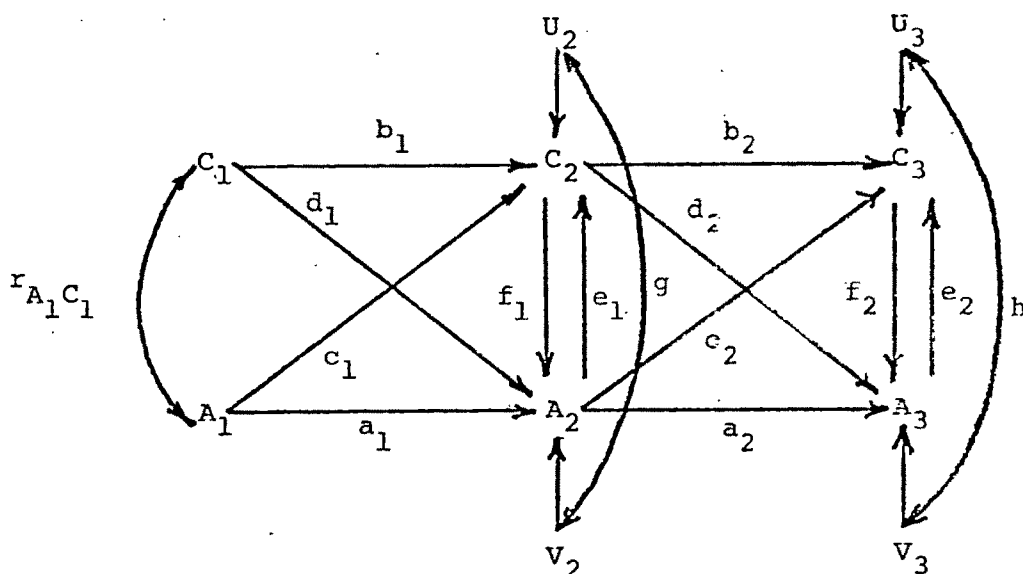
A second approach to the disentangling of reciprocal effects has been to analyze time series data for crime rates, enforcement variables, and a variety of additional variables assumed not to be influenced by crime rates or arrest rates, for a single unit of analysis, usually the entire nation (Votey and Phillips, 1974; Ehrlich, 1975; Land and Felson, 1976). This approach allows explicit consideration of both short-term and long-term effects, both of crime on enforcement and of enforcement on crime, and is therefore superior to cross-sectional analysis. Yet, since it is still necessary to make use of instrumental variables to obtain a unique solution, parameter estimates are subject to the same possible source of bias as estimates derived from cross-sectional analyses.

A third approach to the problem of reciprocal effects, which we extend below, is the use of panel models. Here data are collected for a number of spatially distributed units (e.g., cities, states) at more than one time, and the reciprocal short-term and long-term effects of crime and enforcement estimated. Thus far, all panel studies of crime rates have involved only two waves of data (Tittle and Rowe, 1974; Logan, 1975; Pontell, 1978). With this limited amount of data, however, the utility of panel models is restricted, for it is necessary to impose identification restrictions that are hardly less implausible than those required in cross-sectional and time-series models³ (Duncan, 1969).

should be made on the basis of prior knowledge concerning the causes of crime. Yet this knowledge is still primitive and uncertain. Thus any conclusions derived on the basis of such restrictions must be regarded with caution. Nagin (1978) and Fisher and Nagin (1978) have argued on the basis of their review of the literature that the restrictions which have been used to achieve identifiability are in many instances quite implausible.

³ For example, in an analysis of city crime and arrest rates in Florida for 1971 and 1972, Tittle and Rowe (1974) estimate two-wave panel models which assume that cross-instantaneous effects vanish. Logan (1975), analyzing state index offense and arrest data for the years 1964-1968, also uses two-

² In practice this is usually done by assuming that some demographic, socioeconomic or political variables are causes of punishment, but do not affect crime either directly or indirectly (except through their influence on punishment). The assumption that a given exogenous variable has an effect of specified magnitude on the crime rate (including zero effect)



* Lower case letters represent standardized regression coefficients and correlations among residuals.

Figure 1. Three Wave, Two-Variable Panel Model for Crime Rates and Clearance Rates*

A multi-wave panel model. In view of the uncertainty surrounding the assumptions necessary to identify the models reviewed above, the development of alternative methods of analysis seems warranted. Here we explore an approach that we regard as particularly promising—the use of multiwave panel models which impose assumptions about the consistency of effects rather than assume that certain effects have given values. This method permits the data to play a larger role in the analysis, and therefore seems preferable to methods that require stronger assumptions, given the limitations in our knowledge of crime causation and the duration of causal effects.

The basic ideas of the consistency procedure can be seen in Figure 1, which illustrates a three-wave, two-variable panel model. In this model, the per capita crime rate (C) at time t is assumed to de-

pend linearly on the crime rate at time $t-1$, and on the arrest clearance rate (A) at times t and $t-1$. Similarly, the current clearance rate at time t is assumed to depend linearly on the clearance rate at time $t-1$, and on the crime rates at times t and $t-1$. Thus the model includes both lagged and instantaneous reciprocal influences between the crime rate and the clearance rate. The relationship between the crime rate and the clearance rate at time 1 is taken into account but is not subjected to causal analysis. Explicit allowance is made for the possibility that the residuals for the crime rate and clearance rate at time t (U_t and V_t , respectively) are correlated.

Given our present state of knowledge, a model of this type seems highly plausible. The effect of arrests on crime should persist no more than a few years, since rational criminals will attend to recent police performance in evaluating their chances of arrest. Similarly, the effect of crime on arrests should not last longer than a few years, since increased efficiency measures, to the extent that they are influenced by earlier concern with increasing criminal activity, will probably be responsive to short-term rather than long-term concerns.

The constraints in the model consist of

wave models, and studies various specifications. In one of these, lagged effects are assumed zero; in another, only instantaneous effects of crime and only lagged effects of arrest are assumed; in a third, lagged effects of crime are assumed zero and disturbance terms are assumed uncorrelated. Although there is good overall consistency among the estimates obtained on the basis of these various specifications, the results depend on the untested assumptions of the various models.

the assumptions that the autoregressive and cross-coefficients linking the variables between times 2 and 3 are equal to those between times 1 and 2 (in the notation of Figure 1, $a_1 = a_2$, $b_1 = b_2$, etc.). A similar assumption is implied whenever an equation estimated for one time period is used to predict a crime rate or an arrest rate at a later period. With the assumption that these coefficients remain constant, this particular model is overidentified with 6 degrees of freedom, and each of the parameters is individually identified or overidentified.

A major advantage of this specification over those reviewed above is that it allows the data to play a larger role in estimation. Apart from our assumption that variables at time 1 do not influence those at time 3, we do not fix any of the main parameters to prespecified values, but rather make the assumption that the coefficients, whatever they are, remain constant over time.⁴ In addition, the constrained models give us a good deal of flexibility in respecification. For instance, it is possible to relax the assumption of constant autoregressive effect ($a_1 = a_2$, $b_1 = b_2$ in Figure 1) and the assumption that time 1 rates have no direct effects on time 3 rates and still just identify the model as a whole. Finally, by introducing more waves of data, it is possible to relax some of the constraints, thus permitting a partial test of these assumptions. Since we had seven waves of data (for the years 1964–1970) available, we were able to take advantage of this flexibility in our analysis.

Data and Procedures

Data. Our analysis of the relationship between crime rates and clearance rates is

⁴ For a number of our specifications, we estimated models utilizing both unstandardized (metric) and standardized variables. The first set of models could not fit the data, while the latter set provided good fits. We are not completely certain of the reason for this, but suspect that it is a consequence of trends in the data. Over the years 1964–1970, reported crime rates rose steadily (e.g., total index offenses increased by 101%) while clearance rates experienced no comparable trend. Under this circumstance, a model that assumes constant metric coefficients would not be expected to provide a good fit; on the other hand, a model based on standardized variables avoids this difficulty by effectively detrending the data.

based on reported index offense rates and arrest clearance rates for 98 U.S. cities for the years 1964–1970. Two cities were dropped because of missing data from an original sample of 100 cities drawn by a proportional stratified random procedure from the total universe of cities with a population over 25,000 for which the F.B.I. had crime and arrest data. The 1970 edition of the F.B.I.'s *Uniform Crime Reports* indicates that the universe from which our sample was drawn represents over 90% of the urban population of the U.S.⁵

Data on population size, number of offenses known to police, and number of crimes cleared by arrest were supplied by the F.B.I. for each of the cities for each year from 1964 to 1970, for each of the seven index felonies. For each city, year and felony, *crime rate* was defined to be the number of offenses known to police for that year divided by the population estimate for that year; and *clearance rate* was defined as the ratio of offenses cleared by arrest to the number of offenses known to the police for that felony and that year.

Procedures. Although theoretical considerations suggest that lagged causal effects may exist, theory does not tell us precisely how long a lag to expect. Consequently we examined models with lags of one, two and three years. In models with one-year lags, correlations among the crime rates for consecutive years were so high that the correlation matrix could not be inverted. Under this circumstance, it is not possible to solve for the individual regression coefficients. Substantively, this means that too little change in the rates occurs over the period of a single year for us to detect accurately the impact

⁵ *Uniform Crime Reports* lists cities for which crime rate data are reported according to four strata by population size: 25,000–50,000; 50,000–100,000; 100,000–250,000; and over 250,000. Using the list of cities in the 1968 edition of *Uniform Crime Reports*, we randomly selected 53, 29, 11 and seven cities from each of these strata, respectively. Those numbers are proportional to the number of cities in each stratum of the *Uniform Crime Report's* list of cities. They were drawn to total 100, because that is the number of cities for which the F.B.I. indicated a willingness to supply arrest data.

of a predictor on this change. Thus, if there are lagged effects of any substantial magnitude, they must involve lags of more than one year. When a time lag of two years was employed, the correlations, though still high, were no longer too high to permit matrix inversion. Changes in rates over a two-year period were more substantial, and consequently more discernible. Models with three-year lags yielded results that were similar to those with two-year lags, and are not reported here.

With the exception of the crime rate and clearance rate at time 1, no exogenous variables are explicitly introduced into any of these models. In order to deal with the problem of misspecification and spuriousness, it would have been preferable to have had such controls, but thus far we have been unable to develop adequate data of this type. We note, however, that the problem of bias resulting from the omission of exogenous variables should be less serious in a panel model than in a cross-sectional analysis, as earlier values of C and A are controlled, and this will partly control for the effect of exogenous causes of C and A.⁶

A series of specifications, all generalizations of Figure 1, were estimated. The best fit was obtained by a four-wave model (1964, 1966, 1968, 1970) in which the standardized crime and clearance rates at time t were assumed to depend linearly on one another at times t and $t-1$,

⁶ The two-variable model will provide unbiased estimates in the face of exogenous causes of C and A when the exogenous variables have created a spatial distribution of crime rates and arrest rates but no longer influence those rates; and also when the effect of the exogenous variables persists provided that lagged cross effects vanish beyond a certain point and the exogenous variables remain constant in time. In the latter case, the panel model effectively controls for omitted exogenous variables even if it is not known what they are or exactly how they influence the dependent variables. Since most of the variables that are expected to influence crime rates and clearance rates (e.g., demographic, socioeconomic, political and cultural variables) do not change much from one year to the next, we believe the assumption of constancy should be fairly safe so long as the data are collected over a limited time span. For a complete discussion of issues related to the question of bias in this model, see Greenberg and Kessler (forthcoming).

and all autoregressive coefficients were treated as free parameters. Cross-coefficients linking time 4 with time 3 were constrained to equal those linking time 3 with time 2, but no constraints were imposed on the coefficients linking times 1 and 2. This procedure permits a partial test of the assumption that coefficients remain constant over time. The coefficients representing instantaneous influences were all constrained to remain constant; serial correlation among error terms was assumed to be absent, but correlations among contemporaneous error terms were estimated.⁷

Results. We used LISREL III (Jöreskog and Sörbom, 1975) to estimate all the models discussed below. This procedure provides maximum-likelihood estimates of regression coefficients in overidentified models and also has an option for imposing the constraints that characterize the models. The fit of a model to the observed data is evaluated by comparing the observed matrix of correlations among the crime and clearance rates with the matrix predicted by the model using the parameter estimates generated by the maximum-likelihood procedure. This evaluation was done both by inspection and by use of an appropriate chi-square goodness-of-fit test statistic with degrees of freedom equal to the number of overidentifying restrictions in the model.

We estimated eight applications of this model, one for each of the seven index offenses and one for total index crime. In only one instance (rape) was there a statistically significant difference between the observed and predicted correlation matrices at the 0.05 level (for the other categories, the probability of obtaining a discrepancy as large as the one observed ranged from $p > 0.50$ for total offenses to $p > 0.95$ for burglary), and here the sub-

⁷ Our estimates would be biased in the presence of serially correlated errors. To check that this was not a problem, we made use of the fact that our models can be identified in the presence of first order serially correlated errors using only time 1 variables as instruments. We found that the parameter estimates obtained for total offenses by this procedure differed only in the third decimal place from those obtained on the basis of the assumption that serial correlation of errors is absent.

Table 1. Parameter Estimates^a for Panel Model for F.B.I. Index Offenses^b (N=98)

Coefficient	Offense							
	Murder	Rape	Aggravated Assault	Robbery	Burglary	Grand Larceny	Auto Theft	Total
1. A→C								
A ₁ C ₁	-.033	.058	-.034	-.025	-.005	.078	-.013	.121
A ₂ C ₂ =A ₃ C ₄	-.122	.026	-.113*	-.002	-.014	.064	.015	.151
A ₁ C ₁	.380*	-.069	.129	-.068	-.056	-.115	-.082	-.260
2. C→A								
C ₁ A ₁	.508	.004	-.398	-.375	.442	.053	-1.528	.185
C ₂ A ₂ =C ₃ A ₄	.313	-.063	-.338	-.393	.418	.130	-1.439	.177
C ₁ A ₁	-.415	-.002	.598	.241	-.578	-.211	1.510	-.283
3. C↔A								
C ₁ A ₁	.537*	.309*	-.119	-.098	-.255*	-.451*	-.456*	-.346*
U ₁ V ₁	.279	.235	-.330	-.021	.091	.123	-.218	.195
U ₂ V ₂	.151	.166	-.421	.025	.101	.006	-.265	.136
U ₃ V ₃	.094	.140	-.567	-.062	.227	.041	-.174	.178
χ ₀ ²	3.17	12.61	3.43	2.52	1.24	3.60	3.40	4.57
Probability								
Level	.75	.025	.75	.75	.975	.50	.75	.50

^a X_iY_j denotes the standardized regression coefficient for the causal effect of variable X at time i on variable at time j. The 95% confidence limits for starred coefficients do not include zero.

^b See text for description of the model.

stantive discrepancy between the two matrices was quite small, with a mean absolute discrepancy between elements of only 0.02 and only two discrepancies larger in magnitude than 0.10. In light of this correspondence, we interpreted the parameters estimated by this model for all eight crime categories.

Table 1 presents the parameter estimates for the eight versions of this model, one for each index offense and one for total crime. The results are presented in three panels, corresponding to (1) the effects of arrest on crime, (2) the effects of crime on arrest, and (3) unanalyzed cross-sectional relationships.⁸ These are discussed in turn.

Panel 1 provides information about the impact of arrest rates on crime. Of the 24 coefficients, only two have 95% confidence limits that do not include zero. The only lagged coefficient that is significantly negative occurs for assault, but it is quite small in magnitude (-.113) and is not stable over time; the only instantaneous coefficient whose 95% confidence limits do not include zero is the coefficient for homicide, and it is *positive*, though only moderate in size (0.38).

⁸ As the estimates of stability parameters are of less interest they are not presented here, but will be furnished by the authors upon request.

The second panel provides evidence concerning the effect of crime on arrests. Coefficients for the instantaneous and lagged effect of crime on arrests are moderate to substantial for all offenses but rape. In the case of murder, burglary, larceny, and total offenses the instantaneous effects are negative, while for assault, robbery and auto theft they are positive. However, the standard errors for these coefficients are large (in general, standard errors for the clearance rates are larger than those for the crime rates), and none of the coefficients achieves statistical significance at the 0.05 level.

Finally, panel 3 shows the cross-sectional exogenous correlations among the crime and arrest rates at time 1 for each offense, and the cross-sectional correlations among the error terms for the offenses. Examining the former, we see that six of the eight correlations are statistically significant; those for murder and rape are positive, while those for burglary, larceny, auto theft and total offenses are negative. In a cross-sectional bivariate analysis these correlations would have been taken as evidence of the effect of arrests on crime, an interpretation which our results call into question.

^{*} The correlations among the residual error terms tell us how well our model has done in accounting for the cross-sectional

correlation over each of the subsequent time points of the panel. These correlations measure the influence of exogenous variables on both rates. If the correlated error terms were comparable to the exogenous cross-sectional correlations, it would indicate that the cross-sectional correlations are primarily due to unconsidered exogenous variables. This is only partly the case in our data. With the exception of assault, the correlated error terms are smaller than the exogenous correlations, though in some instances not entirely negligible. However, none of these correlations is statistically significant. Taking this finding, together with the absence of evidence for substantial cross-effects between crime rates and clearance rates, we see that much of the cross-sectional correlations are due to the internal stabilities of the rates themselves, and the initial correlations among these rates, which have not been analyzed. In our data, then, initial correlations brought about by historical forces that no longer operate, together with the natural changes in the rates themselves and the effects of omitted exogenous variables (e.g., socioeconomic and demographic variables), account for the major part of the cross-sectional correlations at later points in time. The reciprocal influences of crime on arrests and arrests on crime are negligible by comparison.

On the basis of these findings we estimated a model in which all autoregressive effects were estimated, but *all* cross effects were fixed at zero. The probability that the discrepancies found between observed and expected correlations could have arisen by chance was greater than 0.20 for homicide, assault and auto theft; greater than 0.30 for rape and robbery; greater than 0.50 for total offenses; greater than 0.70 for burglary; and greater than 0.80 for larceny. On the basis of this test and the tests for the individual parameters in Table 1, we conclude that none of the cross effects in our original model is significantly different from zero. Aggregate criminal activity for the F.B.I. index offenses is not substantially influenced by marginal variations in arrest clearance rates within the range found in our sample of American cities.

Discussion

Although our finding that arrest rates have no measurable effect on reported crime rates is contrary to the deterrence hypothesis, there are a number of ways to interpret our findings consistent with the deterrence doctrine. One possible explanation lies in the interdependency of criminal justice sanctions. Arrest is not a "pure" sanction; an individual who is arrested faces a stochastic distribution of dispositions ranging from dismissal of charges to conviction and imprisonment and, for some offenses, execution. If prosecutorial and judicial agencies respond with greater leniency to the caseload pressures generated by higher arrest rates, or if higher arrest rates are achieved by arresting suspects on the basis of weak evidence that will not stand up in court—with more dismissals as the consequence—the net effect could be to nullify any crime prevention effect due to arrests alone.

Another possible explanation for this seeming insensitivity of crime rates to changes in the clearance rate is that prospective offenders are for the most part ignorant about marginal changes in the probability of being arrested after involvement in an offense. Unless information about sanctions is communicated to potential offenders, variation in sanctions cannot be expected to deter (though it may influence crime rates in other ways, such as through incapacitation, if sanctions entail incarceration).

It is also conceivable that for some offenses, the consequences of an arrest for most of those arrested are not sufficiently serious to make an arrest an effective sanction; or that the stigmatizing effects of an arrest nullify any crime-prevention effects.

The cross-sectional correlations between clearance rates and crime rates in our data are comparable to those reported in the studies of crime rates that have appeared over the last decade (Tittle and Rowe, 1974; Logan, 1975; Brown, 1978). We therefore conclude that these studies, which have been interpreted as lending support to the deterrence doctrine, do not do so. Our analysis strongly suggests that the correlations interpreted in these studies as evidence of crime deterrence

may in fact have been spurious. Only through the use of statistical procedures that are capable of disentangling the various causal effects that are expected on theoretical grounds to link crime rates and punishment levels is it possible to draw inferences about the effect of punishment on crime. Previous studies of crime rates have failed to do this.⁹

REFERENCES

- Brown, Don W.
1978 "Arrest rates and crime rates: when does a tipping effect occur?" *Social Forces* 57:671-82.
- Duncan, O. D.
1969 "Some linear models for two-wave, two-variable panel analysis." *Psychological Bulletin* 72:177-82.
- Ehrlich, Isaac
1973 "Participation in illegitimate activities: a theoretical and empirical investigation." *Journal of Political Economy* 81:521-65.
1975 "The deterrent effect of capital punishment: a question of life and death." *American Economic Review* 65:397-417.
- Fisher, Franklin and Daniel Nagin
1978 "On the feasibility of identifying the crime function in a simultaneous model of crime rates and sanction levels." Pp. 250-312 in Alfred Blumstein, Jacqueline Cohen and Daniel Nagin (eds.), *Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates*. Washington, D.C.: National Academy of Sciences.
- Gibbs, Jack P.
1968 "Crime, punishment and deterrence." *Southwestern Social Science Quarterly* 48:515-30.
- Greenberg, David F.
1977 "Deterrence research and social policy." Pp. 281-95 in Stuart Nagel (ed.), *Modeling the Criminal Justice System*. Beverly Hills: Sage.
- Greenberg, David F. and Ronald C. Kessler
Forth- "Panel models in criminology." In James com- Fox (ed.), *Mathematical Frontiers in ing Criminology*. New York: Academic Press.
- Greenwood, N. J. and W. J. Wadycki
1973 "Crime rates and public expenditures for police protection: their interaction. *Review of Social Economy* 31:138-51.
- Jöreskog, Karl G. and D. Sörbom
1975 "LISREL III: Estimation of linear structural equation systems by maximum-likelihood methods." Department of Statistics, University of Uppsala.
- Land, Kenneth C. and Marcus Felson
1976 "A general framework for building dynamic macro social indicator models: including an analysis of changes in crime rates and police expenditures." *American Journal of Sociology* 82:565-604.
- Logan, Charles H.
1975 "Arrest rates and deterrence." *Social Science Quarterly* 56:376-89.
- Mathiesen, Donald and Peter Passell
1976 "Homicide and robbery in New York City: an econometric model." *Journal of Legal Studies* 5:83-98.
- Nagin, Daniel
1978 "General deterrence: a review of the empirical evidence." Pp. 110-74 in Alfred Blumstein, Jacqueline Cohen and Daniel Nagin (eds.), *Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates*. Washington, D.C.: National Academy of Sciences.
- Orsagh, Thomas
1973 "Crime, sanctions and scientific explanation." *Journal of Criminal Law, Criminology and Police Science* 64:354-61.
- Pontell, Henry N.
1978 "Deterrence: theory versus practice." *Criminology* 16:3-22.
- Tittle, Charles R.
1969 "Crime rates and legal sanctions." *Social Problems* 16:408-28.
- Tittle, Charles R. and Alan R. Rowe
1974 "Certainty of arrest and crime rates: a further test of the deterrence hypothesis." *Social Forces* 52:455-62.
- Votey, Harold and Llad Phillips
1974 "The control of criminal activity: an economic analysis." Pp. 1055-93 in Daniel Glaser (ed.), *Handbook of Criminology*. Chicago: Rand McNally.

⁹ This observation is applicable not only to research that has analyzed aggregated crime rates, but also to studies of the relationship between self-reported criminal activity and perceptions of risk, as perceived risk could be influenced by participation in illegal activity, as well as a cause of it.

THE USE OF PEARSON'S R WITH ORDINAL DATA*

ROBERT M. O'BRIEN

California State College

American Sociological Review 1979, Vol. 44 (October):851-857

Through the use of computer simulations, Labovitz's (1970) examination of the effects of "randomly stretching" measurement scales on the correlation between these stretched scales and an equal distance scoring system are reformulated and extended. Specifically, we examine the effects of the number of rank categories (C) for rank-order variables on the product moment correlation (r) between stretched scales and an equal distance scoring system. The stretched scales are drawn from three types of distributions: (1) the uniform distribution (i.e., the one used by Labovitz), (2) the normal distribution, and (3) a skewed distribution (log-normal distribution). We find that the average correlation (\bar{r}) between the equal distance scoring system and the stretched scale is quite high for both the uniform and normal distributions, and that \bar{r} increases with C only when C is greater than four or five. Thus, contrary to suggestions in the literature, \bar{r} is not a monotonic function of C . More importantly, for the skewed distribution, \bar{r} is a monotonically decreasing function of C and is substantially smaller than \bar{r} 's based on uniform and normal distributions. The implications of these findings for the use of Pearson's r with rank-order values are discussed.

There has been a great deal of controversy concerning the use of "interval-level statistics" with "ordinal-level data." In sociology much of this controversy has focused on the problem of multivariate analysis using ordinal variables. One approach to multivariate analysis of ordinal data is to argue that an ordinal statistic (Kendall's tau) calculated from ordinal-level data may be used as an analogue to Pearson's product moment correlation coefficient (r). The ordinal correlation coefficients are then employed in the standard formulas for multiple regression/correlation, partial correlation, and so on (Hawkes, 1971; Smith, 1974). Others have criticized the use of ordinal measures of association as analogues to Pearson's r (Wilson, 1974; Kim, 1975; 1978; Allan, 1976; Vigderhous, 1971). A second approach recommends the calculation of interval statistics directly from ordinal data, i.e., treating the ordinal data as if it were interval (Labovitz, 1967; 1968; 1970; 1971; 1972; 1975; Borgatta, 1968; Borgatta and Bohrnstedt, 1972). This approach has been criticized by Mayer (1970; 1971), Schweitzer and Schweitzer

(1971), Vargo (1971), Wilson (1971) and Henkel (1975).

The most influential proponent of the second approach has been Sanford Labovitz. Using simulation techniques (1967; 1970), he attempted to demonstrate that the use of interval-level statistics with ordinal-level data does not lead to large errors (at least for certain types of interval-level statistics). In his 1970 article, he demonstrated that "monotonic random scoring" (MRS) systems are highly correlated with equal distance scoring (EDS) systems.¹ Specifically, he transformed an ordinal scale with 36 rankings by assigning a random number from a uniform distribution to each category in the following manner:

- (1) the assigned numbers lie in the range of 1 to 10,000, (2) the assignment of numbers is consistent with the monotonic function of the ordinal rankings, (3) any ties in the ordinal rankings are assigned identical numbers, and (4) the selection of a number is made on the basis of a random generator in the computer program. (Labovitz, 1970:517)

* Direct all communications to: Robert M. O'Brien; Department of Sociology; California State College; San Bernardino, CA 92407.

I wish to express my appreciation to three anonymous *ASR* reviewers for their helpful comments on a previous draft. Thanks are also due to Jane Rowland, our department's master typist.

¹ The term *monotonic random scoring* (MRS) is used to indicate "randomly stretched" scales of the type utilized by Labovitz (1970:517). Equal distance scoring (EDS) refers to scoring systems in which the numbers assigned to rank-order categories are equally spaced, e.g., ranking ten occupations in terms of status and using the numbers 1, 2, 3, . . . , 10; or 2, 4, 6, . . . , 20.

Using this procedure, Labovitz randomly stretched 18 ordinal scales and correlated each of these scales with an equal distance scoring (EDS) system. These product moment correlations were quite high; in fact the lowest Pearsonian r between the EDS and a randomly stretched scale was .97, and the mean value of r was .99. Thus, if the underlying ("true") intervals between ordinal categories are not equal, but are instead "randomly different," this creates little distortion when using Pearson's r . Labovitz (1970:523) concluded that "certain interval statistics can be given their interval interpretations with caution (even if the variable is 'purely' ordinal), because the 'true' scoring system and the assigned scoring system, especially the equidistant system, are always close as measured by r ."

Several criticisms have been directed toward Labovitz's simulation. Of particular importance for our purposes are those of Mayer (1971) and Schweitzer and Schweitzer (1971) who argue that monotonic transformations which are *systematic*, instead of random, can lead to considerably lower values of r than those reported by Labovitz. They demonstrate that certain "rather extreme" monotonic transformations (e.g., exponential transformations) result in lower values of r . However, Kim (1975) has pointed out that even systematic monotonic transformations of a substantial nature (e.g., $X = X^2$) do not appreciably reduce the correlation between an equal distance scoring system (X) and its monotonic transformation (X^2).

Many sociologists find Labovitz's (1970) study persuasive. For these sociologists Labovitz's MRS represents "fairly" (if not more than fairly) the degree to which most ordinal scales differ from interval scales in the social sciences. However, Labovitz's simulations are limited in two very important ways. First, his simulations involved a rank-order variable with many categories (31 different categories). He did not examine the correlation between EDS and MRS when C (the number of rank categories) is small. Such an examination is necessary if Labovitz's arguments are to be extended

to the use of Pearson's r with rank-order variables which have few categories.²

Unfortunately the literature pertaining to this question is not very helpful. On the one hand, there is reason to believe that the correlation between EDS and MRS decreases as C increases. For instance, Schweitzer and Schweitzer (1971) demonstrate that for a number of *nonrandom systematic* monotonic transformations, the value of r decreases as C increases. Morris (1968) argues that as C increases the number of arbitrary assumptions concerning the distances between pairs of ranks and their corresponding MRS increases, and thus, r is an inverse function of C . On the other hand, Labovitz (1970) argues that as C increases the correlation between EDS and MRS increases. Kim (1975:288) provides a rationale for this position:

Since most phenomena we deal with vary within a limited range, as we examine more cases throughout the range the gaps between adjacent true values are likely to decrease. Therefore, as Labovitz noted, the errors in conversion will diminish as the number of cases increases, unless the ordinal distortion is systematic and extreme.

While the technical arguments concerning the relationship between the number of categories and the correlation between EDS and MRS continue, the social researcher is left with little practical guidance as to the use of Pearson's r with ordinal variables which have few categories.

A second limitation is that Labovitz's simulations involved the selection of random numbers from a single type of underlying distribution: a uniform distribution. This procedure is justified only if it is assumed that the underlying (interval level) distribution of the (ordinally measured) variable is uniform. The implicit assumption is that the ordinal values (EDS system) are assigned consistent with the

² Several authors have cited Labovitz (1970) to justify the use of ordinal variables as if they were on an interval level. For example: Roof (1974) uses Labovitz's paper to justify the treatment of a Guttman scale with seven categories as an interval variable; Ball (1972) uses Labovitz's paper to justify the use of an ordinal-level variable as interval with as few as four categories.

monotonic ordering of a random sample of scores from the underlying distribution. Thus, if occupational status is measured ordinally using 30 categories of occupations, Labovitz's procedure assumes that the 30 occupational categories are randomly drawn from an underlying occupational status dimension which has a uniform distribution. However, it might be more reasonable to assume that the underlying status dimension is normally distributed, with most occupations having a moderate degree of status and only a few having a high or low degree of status. Or perhaps it is even better to assume that most occupations have a moderately low status and only a few have high status (i.e., a positively skewed distribution). There is no literature which examines the effects of these assumptions on the value of the correlation between EDS and MRS.

This study addresses three major questions: (1) What is the effect of assuming that the underlying distribution is uniform, normal, or log-normal on the correlation between EDS and MRS? (2) What is the magnitude of the correlation between EDS and MRS when C is small? and (3) What is the relationship between the size of this correlation and C ; i.e., does Pearson's r increase, decrease, or behave in some other manner as C increases? The answers to these questions have practical implications for researchers using Pearson's r with rank-order data.

Procedures and Results

To answer these questions concerning the effects of the type of distribution and the number of rank categories on the magnitude of the correlations between EDS and MRS, a simulation technique was employed. For the monotonic random scores from the uniform distribution, this simulation followed the rules outlined by Labovitz (1970:517). Specifically, for each number of categories (C), C random numbers from one to 10,000 were generated and monotonically ordered from the lowest to highest value.³ These values were

then correlated with an equal distance scoring system consisting of the integer values one to C . For the monotonic random scores from the normal distribution and log-normal (positively skewed) distribution, the C scores were randomly generated, rounded to three decimal places, and then ordered monotonically from the lowest to highest value.⁴ These values were then correlated with an equal distance scoring system consisting of the integer values one to C . The number of independent correlations calculated to determine the average Pearsonian correlation (\bar{r}) in each distribution was 2,000 when the number of categories was nine or less and 1,000 when the number of categories was greater than nine.

Table 1 presents the results of these simulations for the uniform and normal distributions. For the MRS based upon the assumption that the underlying distribution is either uniform or normal, we note the following: First, when the number of categories is small the value of \bar{r} is quite high, e.g., when $C = 3$, $\bar{r} = .9518$ for scores from the uniform distribution, and $\bar{r} = .9552$ for scores from the normal distribution. Second, \bar{r} is not a monotonic function of the number of categories. For the uniform distribution, the value of \bar{r} is equal to 1.00 when $C = 2$; .9518 when $C = 3$; .9462 when $C = 4$; .9493 when $C = 5$; and from that point on increases as the number of categories increases. For scores from the normal distribution, the relationship between C and \bar{r} is similar. Thus, contrary to suggestions in the literature, the relationship between r and C is curvilinear rather than monotonic. Third, although the values of \bar{r} are rather similar for the uniform and normal distributions when C is small, the correlations based on scores from the normal distribution are somewhat smaller than those based on the uniform distribution when C is greater than six or seven. Although the differences between these correlations are

³ The intrinsic function, RANF, in an extended version of fortran (Control Data Corporation, 1978) was used to generate uniformly distributed random numbers.

⁴ The "direct method" recommended by Control Data Corporation's (1973:40-1) Math Science Library was used to generate the random scores from a standard normal distribution. To generate random scores from the log-normal distribution, we raised e ($= 2.7183$) to powers of the normally distributed random numbers.

Table 1. Results for the Scores from the Uniform and Normal Distributions

Number of Categories (C)	Uniform Distribution			Normal Distribution		
	Average \bar{r} (\bar{r})	S.D. of \bar{r}	S.E. of \bar{r}^\dagger	Average \bar{r} (\bar{r})	S.D. of \bar{r}	S.E. of \bar{r}^\dagger
2	1.0000 ^a	.0000 ^a	.0000 ^a	1.0000 ^a	.0000 ^a	.0000 ^a
3	.9518	.0417	.0009	.9552	.0400	.0009
4	.9462	.0417	.0009	.9492	.0407	.0009
5	.9493	.0375	.0008	.9495	.0386	.0009
6	.9523	.0341	.0008	.9512	.0378	.0008
7	.9575	.0300	.0007	.9562	.0345	.0008
8	.9594	.0283	.0006	.9583	.0332	.0007
9	.9643	.0243	.0005	.9602	.0315	.0007
12	.9695	.0205	.0006	.9612	.0260	.0008
15	.9762	.0163	.0005	.9633	.0250	.0008
18	.9795	.0145	.0005	.9636	.0254	.0008
27	.9856	.0088	.0003	.9704	.0184	.0006
36	.9886	.0078	.0002	.9708	.0170	.0005

^a No matter what monotonic transformation is made, the correlation is 1.00 when there are only two categories.

[†] When the number of categories is two through nine, 2,000 r 's were computed; when the number of categories is 12 or above, 1,000 r 's were computed.

small, the standard errors of \bar{r} are, in each case, less than .001.⁵ Fourth, the stability of \bar{r} is less when C is small. This can be seen by examining the estimates of the standard deviation of \bar{r} contained in Table 1. This is an important finding, since even if the mean value of \bar{r} is quite high when C is small, there is still a "good chance" of obtaining a relatively low value of \bar{r} .

For MRS based upon the assumption that the underlying distribution is log-normal, the results are dramatically different. Examining Table 2, we find that \bar{r} is a monotonically decreasing function of the number of categories; e.g., when $C = 3$, $\bar{r} = .9445$; when $C = 6$, $\bar{r} = .9016$; and when $C = 36$, $\bar{r} = .7905$. In addition, the values of \bar{r} are lower than those for the uniform and normal distributions at all levels of C (except when C equals two) and this difference increases as C increases. Furthermore, the standard deviations of the \bar{r} 's are typically much larger than those for scores based on the uniform and normal distributions.

Discussion

Labovitz's (1970) paper represents probably the most influential justification

for using Pearson's r with ordinal-level variables to have appeared in the sociological literature. In that paper he attempts to assess the amount of distortion in Pearson's r which results from treating rank-order values as if they were interval. Throughout his discussion it is assumed that the ordinally measured variable is based on an underlying variable with an unknown interval metric. His procedure is to assume (implicitly) that the distribution of the underlying variable is

Table 2. Results for Scores from a Log-Normal Distribution

Number of Categories (C)	Average \bar{r} (\bar{r})	S.D. of \bar{r}^\dagger	S.E. of \bar{r}^\dagger
2	1.0000	.0000 ^a	.0000 ^a
3	.9445	.0420	.0009
4	.9261	.0544	.0012
5	.9151	.0649	.0015
6	.9016	.0719	.0016
7	.8951	.0764	.0017
8	.8828	.0855	.0019
9	.8813	.0862	.0019
12	.8641	.0887	.0028
15	.8431	.0993	.0031
18	.8294	.1014	.0032
27	.8038	.1124	.0036
36	.7905	.0998	.0032

^a No matter what monotonic transformation is made, the correlation is 1.00 when there are only two categories.

[†] When the number of categories is two through nine, 2,000 r 's were computed; when the number of categories is 12 or more, 1,000 r 's were computed.

⁵ This finding is consistent also with the asymptotic expectations presented in Stuart (1954). As the number of categories approaches infinity the expected correlation between EDS and MRS from a uniform distribution is 1.00; the correlation between EDS and MRS from a normal distribution is .9772.

uniform and that the ordinal scoring of the variable does not correspond to equal intervals of the underlying variable, but instead to intervals of a randomly different size. Two important limitations of his approach should be noted: (1) he assumes (implicitly) that the underlying variable has a uniform distribution, and (2) he deals only with the case in which there are 31 different categories of the ordinal variable. Thus, his results pertain specifically to the use of rank-order values as interval when the underlying distribution is uniform and the number of categories is relatively large.

In this investigation, we have found that if one is willing to assume that the underlying variable is either uniformly or normally distributed, the use of rank-order values causes little distortion in r . In fact, for those cases with the most severe distortion, i.e., where the number of categories is only four or five, the average Pearsonian r is approximately .95. However, even if the underlying distribution is uniform or normal the distortion in r may be greater than the .95 figure would indicate, since there is variation around the mean value of r and this variation is greatest when the number of categories is small. This can be seen by comparing the standard deviation for r in Table 1 when C is small and when C is large.

The situation is dramatically different if one assumes that the underlying distribution is quite skewed (log-normal).⁶ In this situation our results do not support the use of rank-order values as if they were interval. For example, when the number of categories is six, $r = .9016$ for the log-normal distribution compared with .9523 for the uniform and .9512 for the normal distribution; in addition, its standard deviation is almost twice as great as those for the uniform and normal distributions. The comparison is even more damaging

for this skewed distribution as the number of categories increases. Errors of this magnitude are likely to lead to much larger errors in multivariate analysis, e.g., using a correlation matrix as input for a regression analysis. Thus unless the researcher is willing to make an assumption about the form of the distribution underlying the ordinally measured variable, the results of our study and of Labovitz's (1970) study cannot be used to justify the use of Pearson's r with rank-order data. Note, however, that the researcher may have reasonable grounds for assuming that the distribution of the underlying variable is not highly skewed (e.g., Borgatta and Bohrnstedt, 1972).

The higher correlations between EDS and MRS from the uniform distribution are probably due to the fact that the scores from this distribution are not systematically distorted by equal distance scoring, but only randomly distorted. For the normal distribution, however, there is some systematic distortion since the scores in the underlying distribution are "bunched" toward the center of the distribution, while the equal distance scoring system treats all of these scores as equally spaced. In the log-normal distribution the differences in the sizes of the intervals between scores is greater than in the normal distribution (see fn. 6) and thus the assignment of rank-order values to these scores creates even greater distortion.

The approach taken in this study hopefully has resolved the debate concerning the relationship between the number of categories and the correlation between EDS and MRS, when the scores are drawn from a uniform distribution. Our results indicate that both Morris (1968) and Labovitz (1970) were partially correct. When the underlying distribution is uniform (or normal), \bar{r} first decreases as C increases and then increases. The value of \bar{r} reaches its nadir when C equals four or five and increases thereafter. Using a rationale somewhat similar to Morris's (1970), we suggest the following explanation of these results: For distributions such as these, where the systematic distortion resulting from the use of EDS is not too great, increasing the number of categories increases the possible distortion.

⁶ The log-normal distribution is somewhat more skewed than the distribution of income in the United States. For our simulation, values of various percentile points are reported below: 1st centile point = .10; 10th centile point = .28; 20th centile point = .43; 30th centile point = .59; 40th centile point = .78; 50th centile point = 1.00; 60th centile point = 1.29; 70th centile point = 1.69; 80th centile point = 2.32; 90th centile point = 3.60; 99th centile point = 10.24.

tion (see, e.g., Abelson and Tukey, 1963; and Morris, 1968), but at the same time decreases the likelihood of having extreme gaps between the underlying values. The first tendency predominates when C is small, but is "overwhelmed" as the number of categories is increased. When the underlying distribution is log-normal, however, the relationship between \bar{r} and C is negative (i.e., \bar{r} is a monotonically decreasing function of C). In this case, it may be suggested that the likelihood of having relatively extreme gaps between the underlying values does not decrease rapidly. In fact, when C is small there is a good chance that one of the extreme values in the positively skewed tail of the distribution will not be selected. This is not the case when C is large.⁷

Finally, it should be noted that the correlation between the EDS and the scores from the underlying distribution can be viewed as a type of validity coefficient, i.e., the correlation between the values or scores for the underlying construct and the equal distance scoring system measure of the construct. A correlation of .95 indicates that the underlying interval-level variable shares 90.25% of its variance in common with its equal distance scoring system representation. Clearly, however, this validity coefficient reflects only one possible source of invalidity in the measurement of the underlying construct. Specifically, it reflects the amount of invalidity introduced as a result of using EDS to represent values from a particular underlying distribution. The long run solution to this particular aspect of measurement invalidity is to move beyond simple rank-order measurement whenever possible.

REFERENCES

- Abelson, R. P. and J. W. Tukey
1963 "Efficient utilization of non-numerical information in quantitative analysis: general theory, the case of simple rank order." *Annals of Mathematical Statistics* 34:1347-69.
- Allan, G. B. Boris
1976 "Ordinal-scaled variables and multivariate analysis: comment on Hawkes." *American Journal of Sociology* 81:1498-500.
- Ball, D.
1972 "The scaling of gaming: skill, strategy and chance." *Pacific Sociological Review* 15:277-94.
- Borgatta, E. F.
1968 "My student, the purist: a lament." *Sociological Quarterly* 9:29-34.
- Borgatta, E. F. and G. W. Bohrnstedt
1972 "How one normally constructs good measures." *Sociological Methods and Research* 1:3-12.
- Control Data Corporation
1973 *Math Science Library, Vol. 7. Probability Statistics and Time Series.* Minneapolis: Control Data Corporation.
1978 *Fortran Extended Version 4 Reference Manual.* Minneapolis: Control Data Corporation.
- Hawkes, R. K.
1971 "The multivariate analysis of ordinal measures." *American Journal of Sociology* 76:908-26.
- Henkel, R.
1975 "Part-whole correlations and the treatment of ordinal and quasi-interval data as interval data." *Pacific Sociological Review* 18:3-26.
- Kim, Jae-On
1975 "Multivariate analysis of ordinal variables." *American Journal of Sociology* 81:261-98.
1978 "Multivariate analysis of ordinal variables revisited." *American Journal of Sociology* 84:448-56.
- Labovitz, S.
1967 "Some observations on measurement and statistics." *Social Forces* 46:151-60.
1968 "Reply to Champion and Morris." *Social Forces* 46:543-4.
1970 "The assignment of numbers to rank order categories." *American Sociological Review* 35:515-24.
1971 "In defense of assigning numbers to ranks." *American Sociological Review* 36:521-2.
1972 "Statistical usage in sociology: sacred cows and rituals." *Sociological Methods and Research* 1:13-37.
1975 "Comment on Henkel's paper: the interplay between measurement and statistics." *Pacific Sociological Review* 18:27-35.
- Mayer, L. S.
1970 "Comment on 'The assignment of numbers to rank order categories.'" *American Sociological Review* 35:916-7.
1971 "A note on treating ordinal data as interval data." *American Sociological Review* 36:519-20.
- Morris, R. N.
1968 "Some observations on measurement and statistics': further comments." *Social Forces* 46:541-2.
1970 "Multiple correlation and ordinally scaled data." *Social Forces* 48:299-311.

⁷ The same type of monotonically decreasing relationship between EDS and MRS has been found by the author (O'Brien, 1979) for simulations involving other "skewed distributions," e.g., chi-square with one degree of freedom, and gamma with a shape parameter of one or two.

- O'Brien, R. M.
1979 "The correlation between variate-values and ranks in small sized samples." Unpublished paper. Department of Sociology, California State College, San Bernardino.
- Roof, W. C.
1974 "Religious orthodoxy and minority prejudice: causal relationship or reflection of localistic world view?" *American Journal of Sociology* 80:643-64.
- Schweitzer, S. and D. G. Schweitzer
1971 "Comment on the Pearson r in random number and precise functional scale transformations." *American Sociological Review* 36:518-9.
- Smith, R. B.
1974 "Continuities in ordinal path analysis." *Social Forces* 53:200-29.
- Stuart, Alan
1954 "The correlation between variate-values and ranks in samples from a continuous distribution." *British Journal of Statistical Psychology* 7:37-45.
- Vargo, L. G.
1971 "Comment on 'The assignment of numbers to rank order categories.'" *American Sociological Review* 36:517-8.
- Vigderhous, G.
1977 "The level of measurement and 'permissible' statistical analysis in social research." *Pacific Sociological Review* 20:61-72.
- Wilson, T. P.
1971 "Critique of ordinal variables." *Social Forces* 49:432-44.
1974 "On 'ordinal path analysis.'" *Social Forces* 53:120-3.

COMMENTS

CRITIQUE OF A RECENT PROFESSIONAL "PUT-DOWN" OF THE HAWTHORNE RESEARCH

(COMMENT ON FRANKE AND KAUL, ASR
OCTOBER, 1978)*

The lead article by Richard Franke and James Kaul in the October 1978 issue of the *American Sociological Review* contains severe and unjustified criticism of the Hawthorne research, which was carried out at the Western Electric Company in Chicago in the late 1920s and reported in detail by Fritz Roethlisberger and William Dickson (1939) in their monumental *Management and the Worker*. According to Franke and Kaul (1978:624), Roethlisberger and Dickson concluded that the "measured experimental variables had little effect [on output], but that the unmeasured quality of human relations of workers to management and peer groups was responsible for most output improvements observed in the first four experiments." As most social scientists will recall, in addition to dependent variables measuring output, the "measured experimental variables" included as independent variables rest periods and hours worked per day and per week. Using raw statistical data from the original research plus some data not analyzed in *Management and the Worker*, Franke and Kaul (1978:627) undertake a complex statistical analysis of the "measured experimental variables." They add several dichotomous variables which

are expressed as dummy variables of zero to one for managerial discipline (the replacement of two of the five workers, with one of the replacements assuming the role of straw boss), and for the occurrence of the economic depression, the supply of defective raw materials for two periods, the temporary voluntary replacement of one worker, and for the change from a large group to a small group incentive system of pay after the first two experimental periods.

They claim that their analyses "differ starkly from most earlier descriptions of the findings of the Hawthorne experiments" (Franke and Kaul, 1978:635) because

there seems to be no substitute for quantitative analysis. . . . Quantitative analysis enables the scientist to separate fact from fiction. . . . To as-

sume that output changes resulted from unmeasured changes in the human relations of workers therefore seems injudicious, even though it was the assumption of the Hawthorne researchers and has been accepted and built upon by many social scientists over the past several decades. (Franke and Kaul, 1978:638)

To the contrary, Franke and Kaul (1978:638) report that "most of the variance in production rates during the first relay experiment could be explained by measured variables." Using stepwise regression they state that

differences in rates of hourly output by the first relay group are explained in model 1 through managerial discipline (79%), economic depression (an additional 14%), and through scheduled rest time (4%). Most of this 97% variance explanation appears to have resulted from the imposition of managerial discipline, which included better performing replacement workers as well as the disciplinary example, from the beginning of period 8. (Franke and Kaul, 1978:630-1)

Thus they find no support for Roethlisberger and Dickson's conclusions, but strong evidence that what they call "managerial discipline" and fear of job loss due to the onset of the depression explain 93% of the variance associated with increased output.

Although Franke and Kaul acknowledge that the Hawthorne studies were "seminal" and "led to widespread acceptance of human relations as a primary factor in worker performance," (Franke and Kaul, 1978:638), they find no support for the notion "that economic benefits result from humanitarian activity," or even that "increase of output was due to a changed relation with supervision" (Franke and Kaul, 1978:636), in agreement with Argyle (1953). If they are correct, social scientists and management theorists should reject the conclusions of the Hawthorne research, despite its revolutionary impact on industrial relations practices beginning a half century ago. Have Franke and Kaul given Roethlisberger and Dickson and their brethren their coup de grace?

The first thing to be noted is the well-known temptation among quantitative researchers to manipulate those variables that can be easily quantified and to ignore those that cannot. Franke and Kaul reject the major conclusions of the Hawthorne researchers concerning the effects on output of employee morale, worker solidarity, subtle social control processes, and employee attitudes and feelings. But that is where the main contributions from the Haw-

* Direct all communications to: Walter I. Wardwell; Department of Sociology; University of Connecticut; Storrs, CT 06268.

thorne research lie, not with the intentionally manipulated and easily quantified variables. It is precisely because the original researchers were flexible in their research design, freely admitted their mistakes, and radically revised their theories and assumptions when required that their analysis has proved so valuable. Starting first with physiological variables (fatigue and the need for food and rest), they then discovered a need to reinterpret the relay assembly test-room data from the perspective of psychology. They invoked such concepts as attitudes and sentiments as the main explanatory variables for the changes in output that were not explainable as effects of the independent variables (rest periods and hours worked) that they originally chose to manipulate. Later, after still further analysis of the experimental data and of more than 21,000 interviews with individual workers, they determined that psychological modes of analysis were not adequate and again reconceptualized their research, this time from a sociological perspective. As a result, they designed the bank-wiring observation room phase of the research, clearly not an experiment, since no variables were intentionally manipulated (except for establishment of a neutral observation setting). The observation provided the researchers with their most important insights into the dynamics of the functioning of work groups and led to the most significant conclusions to be drawn from the entire Hawthorne research program. It is particularly significant that Franke and Kaul totally ignore this important phase of the research, admittedly difficult to quantify, in favor of the "measured variables," as they term them, from the earlier relay assembly test-group phase.

Of all the variables that Franke and Kaul analyze, the two most important turn out to be dichotomous variables that the Hawthorne researchers had not intended to be independent variables, though they were well aware of their impact on the research. These variables are the replacement of two operators after the seventh experimental period and the onset of the depression. The label *managerial discipline*, which Franke and Kaul use to describe replacement of the two operators, reveals their biased interpretation of the event. They state with no apparent basis in fact that the two operators were replaced "because of unsatisfactory attitudes in response to requests for greater diligence and more output" (Franke and Kaul, 1978:627). Actually they make three different misinterpretations of the event: as punishment for the two workers who were removed, as an implied threat to the remaining three workers, and as a reflection of the conscious intent of the researchers to infiltrate into

the group a worker who would become a "straw boss."

What actually did happen? It is certain that operators 1A and 2A had become so uncooperative with the research that Roethlisberger and Dickson used the words "hostile" and "openly defiant" to describe them. But it is important to keep in mind that the leader of the pair was discovered four months later, upon review of her medical records, to have had an anemic condition that could have been the root cause of her disaffection (Roethlisberger and Dickson, 1939:169-70) and that the request by two of the other workers "that either they or operators 1A and 2A be removed from the test room" (Roethlisberger and Dickson, 1939:55) was what impelled the researchers to action after a two-month effort to cope with the problem by less drastic means. Returning the workers to the main department was not viewed as punishment, nor was it so interpreted by the remaining workers, despite Franke and Kaul's speculation "that improvement resulted from the positive example of the two new workers, as well as from the aversive effects of management's disposal of two of the original workers" (Franke and Kaul, 1978:636). If the change had been intended or viewed as a threat, then output should have immediately increased as the result of "managerial discipline." But that did not happen. The record shows that the hourly output rates of operators 3 and 4, which had been rising rapidly during period 7, immediately ceased to rise and leveled off in period 8, the period following the switch of workers. Although operators 1 and 2 immediately began producing more relays than the two workers they replaced, their level of output did not exceed that of operators 3 and 4, as it should have done if they were role models. What is more, during periods 8 through 12 the hourly rates for all operators declined rather than increased, further evidence that the single episode of "managerial discipline," on which Franke and Kaul place their primary emphasis, could not possibly be the principal explanatory variable for the overall increase in output. The implication that operator 2 became the highest producer of the five and sometimes urged the others to produce more because management placed her in the room as a "straw boss" represents a gross distortion of the available evidence. In fact, she was selected from among the workers in the main department mainly to give her a change of job because she was grieving over the recent deaths of her mother and sister (Roethlisberger and Dickson, 1939:61-2). It is also relevant that her spurt of productivity did not occur until period 13; and in that spurt she was paced by her new friend,

operator 4, one of the original workers in the room.

An equally serious problem arises from the fact that managerial discipline is a dichotomous variable separating the first seven experimental periods from those that followed, while many other changes occurred gradually over the five-year span of the research, including subtle and complex qualitative changes difficult to quantify. Increases in group solidarity, in favorable attitudes toward the research and its goals, and in the workers' obvious pleasure in working under solicitous supervisors (which were among the most important but unintended effects of the original research design) must have developed gradually over the long life of the relay assembly test-room research. In addition, some of the most important changes occurred *within* experimental periods (e.g., in period 13, during which operators 2 and 4 exhibited large increases in hourly output). Such within-period changes are totally obscured by a statistical technique based on mean outputs for each period.

Franke and Kaul state that a second dichotomous variable, which they call the "onslaught of the great depression," accounts for 14% of the variance in average hourly output. They pinpoint its occurrence as "early in period 15," which extended from September 2, 1929 through April 5, 1930. However, the data which Roethlisberger and Dickson present and analyze in *Management and the Worker* extended only through June 29, 1929, marking the termination of period 13. How could "the onslaught of the great depression," which did not occur until the following September, explain variations in output rates going back to 1927? Actually, the impact of the depression on most American workers did not occur much before the stock market crash in October 1929. In the case of the relay assembly group, the impact could have come still later, since it was not until April 1930 that they were cut below 40 hours of work per week. By limiting their analysis in *Management and the Worker* to the first 13 experimental periods, ending June 29, 1929, Roethlisberger and Dickson were able to minimize the effects of the depression on the variables they studied.

In still other ways Franke and Kaul misrepresent the original Hawthorne analyses. They imply that Roethlisberger and Dickson deny the importance of the wage incentive, which was based on the small group of five workers rather than on a large group comprising the entire department. However, a more careful reading of *Management and the Worker* would have informed them that it was precisely in order to measure the independent effect of the small-group wage incentive that the second

relay assembly test group was set up. And it was in order to test the effect of all other variables (controlled and uncontrollable) except the small-group wage incentive that the mica splitting test group was set up. Franke and Kaul apparently fail to comprehend this because they state that the 15.5% improvement in hourly production rate in the mica splitting group "apparently result[ed] from the reduction of fatigue by use of rest pauses and fewer working hours" (Franke and Kaul, 1978:628, fn. 9), thereby ignoring the possible influence of other relevant variables (e.g., the fact of being studied, being placed in a segregated location, etc.). When only the effects of selected independent variables are examined to the exclusion of others, neither the confounding nor the genuine effects of the other variables can be determined.

Finally, Franke and Kaul seem to have only what Elton Mayo (1945), following William James, called "knowledge about" the complex and detailed research they criticized, not really "knowledge of" it. Their understanding of Roethlisberger and Dickson's analysis appears superficial, as though derived from secondary sources and others' interpretations, rather than based on in-depth familiarity with the rich material and analyses from the Hawthorne research. Certainly closer attention to *Management and the Worker* could have prevented their misinterpretation regarding "managerial discipline," discussed above. The most extreme statement of their position follows: "It is not 'release from oppressive supervision,' as suggested by Landsberger (1958), but its reassertion that explains higher rates of production" (Franke and Kaul, 1978:636). This statement also reveals an even more surprising bias on the part of the writers, only hinted at in their preference for "close managerial control" (Franke and Kaul, 1978:638) and their dislike of "humanitarian activity" (Franke and Kaul, 1978:636). Such sentiments are also expressed in the following citation, which fleshes out their favorable reference to the "conceptually simpler mechanisms such as those of scientific management (Taylor, 1911)":

These include the possible benefits of fatigue reduction, use of economic incentives, the exercise of discipline, and other aspects of managerial control. But it is precisely such factors to which we are directed by empirical analyses of the Hawthorne data. In particular, the discharge and replacement of two somewhat insubordinate workers were followed by higher individual and group production rates in the first relay experiment. Fairly strong evidence has been provided in recent years showing that proclivity to exert close managerial control can benefit the economic performance of individual managers (Miner, 1965), or organizations (Kock, 1965), and of whole societies

(Franke, 1973; 1974; 1977). (Franke and Kaul, 1978:638)

In contrast to most previous criticism of the Hawthorne research, which has tended to come from the ideological left because of presumed managerial bias in the concern with productivity, Franke and Kaul's critique, condemning the Hawthorne research for its concern with human relations and humanitarian activity in the workplace, and calling for a return to stronger emphasis on "discipline and other aspects of managerial control" (Franke and Kaul, 1978:638) appears to derive more from the ideological "right." It is indeed fascinating to discover that both sources of criticism of the Hawthorne research focus on variables such as hours worked, economic incentives, fear of unemployment, power to discipline, etc., and agree that human relations at work should be de-emphasized. However, the lessons of the Hawthorne researchers will probably continue to survive such attacks.

Walter I. Wardwell
University of Connecticut

REFERENCES

- Argyle, Michael
1953 "The relay assembly test room in retrospect." *Occupational Psychology* 27:98-103.
- Franke, Richard Herbert
1973 "Critical factors in the post-war economic growth of nations: review of empirical studies and implications for participative organization." Pp. 107-19 in E. Pusić (ed.), *Participation and Self Management*, Vol. 5. Zagreb: University of Zagreb.
- 1974 *An Empirical Appraisal of the Achievement Motivation Model Applied to Nations*. Ph.D. dissertation, Graduate School of Management, University of Rochester.
- 1977 "Culture and industrial development." Paper presented at the International Conference on Social Change and Organizational Development, Inter-University Centre of Post-Graduate Studies, Dubrovnik.
- Franke, Richard Herbert and James D. Kaul
1978 "The Hawthorne experiments: first statistical interpretation." *American Sociological Review* 43:623-43.
- Kock, Sven E.
1965 *Företagsledning och Motivation*. (Management and Motivation, with English summary). Helsinki: Affärssekonomisk Förlagsförening.
- Landsberger, Henry A.
1958 *Hawthorne Revisited*. Ithaca: Cornell University Press.
- Mayo, Elton
1945 *The Social Problems of an Industrial Civili-*

zation. Boston: Harvard University Graduate School of Business Administration.

- Miner, John B.
1965 *Studies in Management Education*. New York: Springer.
- Roethlisberger, Fritz J. and William J. Dickson
1939 *Management and the Worker*. Cambridge, Ma.: Harvard University Press.
- Taylor, Frederick W.
1911 *The Principles of Scientific Management*. New York: Harper and Row.

THE HAWTHORNE EXPERIMENTS: RE-VIEW*

Critical review is important for the improvement and application of science, and it is useful to participate with Walter I. Wardwell in this process. As noted in his critique (Wardwell, 1975), our analysis of the first relay experiment at the Hawthorne plant does explain most of the variance in production rates for the group of workers, as it also does separately for each individual (Franke and Kaul, 1978). In describing our study,¹ Wardwell expresses concern (1) over the meanings of the independent variables in the experiment, (2) over the use of quantitative data and procedures for unraveling complex social phenomena, and (3) over our interpretations of the results of this first truly quantitative analysis of the Hawthorne experiments.

Certainly it is advisable to be circumspect when reinterpreting a body of work historically as influential as the Hawthorne experiments of 1924-33, carried out by managers and employees of the Western Electric Company with help by consulting engineers and physical and social scientists at MIT and (later) at Harvard.² But

* Address communications to: Richard H. Franke; Department of Management; Worcester Polytechnic Institute; Worcester, MA 01609.

I am grateful to Charles Wrege for information about those who did the Hawthorne experiments, to Arthur Gerstenfeld for help in carrying the Hawthorne logs to Boston, and to Elke Franke for radical editing.

¹ His description is generally accurate, though not comprehensive, and on occasion it seems to reverse the order of evidence and conclusion in the Hawthorne study. In following the critique, the reader may wish to reexamine the Franke and Kaul article of October 1978. There are several misprints in that article: in the reference list, the book by Homans and the article by Rotinson were published in 1950 rather than 1959. A final misprint is in Table 3, where there are operators 2A + 2, not 2A + 2A, with no superscript.

² We perpetuated an error in suggesting that social scientists from Harvard were involved in interpreting the illumination experiments and in planning the first

certainly also, modern statistics and computers are tools that can help shed new light on previous assumptions. In addition, through use of many of the original documents³ which had

relay experiment (Franke and Kaul, 1978:624). In fact, Elton Mayo first visited the Hawthorne plant over April 24 to 26, 1928 (cf. Baritz, 1960:90; Whitehead, 1938, I:124; Wrege, 1979b), and "had nothing to do with the design of or conduct of the original illumination experiments [1924-27] or of the Relay Assembly Test Room [1927-33]" (Roethlisberger, 1977:48). As described by Wrege (1976; 1979a), those who were particularly important in determining the early illumination experiments were Clarence G. Stoll and George A. Pennock, Western Electric managers, and Dugald C. Jackson, MIT electrical engineering professor and chairman of the Committee on Industrial Lighting—an industry-supported research group associated with the National Research Council of the National Academy of Sciences (see also Snow, 1927, and Wiljanen, 1979). The illumination experiments were carried out and reoriented in part toward human relations by Western Electric managers, by Charles E. Snow, the field engineer for the Committee on Industrial Lighting, and by Homer Hibarger, who was Snow's assistant and a supervisor, observer, or experimenter in illumination, first relay, and second relay experiments, until laid off on April 29, 1932. In the first relay experiment, Hibarger and the Western Electric management (especially Pennock) appear to have provided most initiation and direction, often expanding upon observations and mini-experiments of Snow and Hibarger in the earlier illumination experiments. The involvement of Clair E. Turner, another MIT professor, began on April 16, 1928, and seems to have been substantial (cf. Roethlisberger, 1977:48; Turner, 1933; Wrege, 1979b). Finally, the Harvard researchers did have some contact with the first relay experiment beginning with Mayo's visit in 1928, and went on to participate in the nonreactive "experiments" and to provide the most influential descriptions of all of the events at Hawthorne—those written by Mayo, Whitehead, Roethlisberger and Dickson, and Homans, apparently using the documents noted here in fn. 3.

³ The 17 boxes of documents that we used at the Hawthorne plant in 1976 and 1977 now have been transferred to the archives of the Baker Library at Harvard University, and our complete microfilm record of these has been deposited at the Hawthorne plant and in the libraries of the University of Wisconsin, Milwaukee, Worcester Polytechnic Institute, and Harvard University. (A guide to these records is provided in the AAAS version of the ASR article by Franke and Kaul, 1978.) In addition, nine 11 × 18 inch log books from the Hawthorne experiments were obtained from the Hawthorne plant in January 1979 and have been deposited with the Harvard archives. These consist of: four volumes of daily and weekly logs from the first relay experiment, but only for the 24th experimental period (which is seen to have extended from March 1, 1932, until May 4, 1933, in somewhat altered form, rather than halting on February 8, 1933, as reported by Franke and Kaul, 1978:fn. 6); one volume of day-by-day sum-

been employed by Mayo (1933), Whitehead (1938), and Roethlisberger and Dickson (1939) to obtain their graphical representations and qualitative interpretations, but which have not been readily accessible to most subsequent researchers, a more accurate assessment of "what really happened at Hawthorne" should be possible. Thus the fact that our results and interpretations differ from those of many predecessors need not reflect upon the skills of the researchers involved. Indeed, under these conditions it would be surprising if the historical interpretations would not require change. This paper will elaborate some possible changes, as developed by Franke and Kaul (1978), in response to Wardwell's comments.

INDEPENDENT VARIABLES

Managerial Discipline

Wardwell objects to viewing the replacement of two of the five workers in the first relay experiment as "managerial discipline," i.e., punishment, threat, and provision (perhaps inadvertently) of a straw boss in the person of new operator 2. Undoubtedly there was greater output by operator 2 than by any other worker in each of the remaining periods 8 to 23, and there was a general productivity spurt following the replacement intervention, as shown by the data of Appendices 1 and 2 and the analyses of Tables 2, 3, and 4 (Franke and Kaul, 1978).

The intrinsic meaning of the managerial intervention at the beginning of period 8 is more difficult to ascertain. But the available records show that in period 6 both operators who were replaced had preferred the experiment over regular work:

Operator 1A: "I don't intend to go back in the other department."

Operator 2A: "I wish this test would last two more years."⁴

maries of the mica splitting experiment; and four volumes of daily and weekly logs from the bank wiring experiment. (A microfilm record of these volumes is to be made available by Harvard.) No original log books for the illumination experiments or for periods 1 to 23 of the first relay experiment yet have been seen by the present researcher, although these are known to have existed (cf. Whitehead, 1938, I:28; Wrege, 1976; 1979a; 1979b). Some additional records have been recovered by Wrege through investigations over several decades, and these were deposited with the Industrial and Labor Relations library of Cornell University in June 1979.

⁴ Progress Report No. 1, December 3, 1927, Section No. 9, page 8 (microfilm reel 1, listed as box 1, folder 3). These original operators number 1 and 2

Also, log notes as early as period 3 relate threats by the shop foreman that if excessive "talking and fooling" continued, "the girls . . . would be taken back to the regular department, and in the most offending cases laid off (dismissed from the company) if improvement was not made." This foreman "continued to exercise his functions as the disciplinary head of the Test Room" well into 1928, and to a lesser extent to the end of the experiment.⁵ Other pressures to improve efficiency included threats in period 7 by executives to remove privileges (Whitehead, 1938, I:116).

The role of new operator 2 as straw boss is described throughout chapters 16 and 17 of Whitehead (1938, I): "Op. 2 was the ablest member of the group, whether judged by intelligence tests or by any other standard" (120). "On the whole, Op. 2 succeeded in inducing a greater work interest amongst the other operators, but at times the latter showed some resentment" (123).

Op. 2 forced the group into a partial adoption of her enthusiasms; she constituted herself the keeper of its conscience; she admonished this one, encouraged that one, and built up an entire system of control based on social favors and prestige. (158)

Thus "managerial discipline" appears as a continuing factor rather than as a "single episode" as suggested by Wardwell, but the punishment administered in period 8 was needed to make it real. While it can never be completely clear what transpired in the minds of Western Electric managers and employees, either leading to or following the removal of operators 1A and 2A on January 25, 1928, "for a lack of co-operation, which would have otherwise necessitated greatly increased disciplinary measures" (Whitehead, 1938, I:118), the death of operator 2's sister in December 1927⁶ and the discovery in April 1928 by Mayo that operator 2A was anemic seem irrelevant to the intervention. The employees who were removed did value being in the experiment, so that removal can be seen as punishment; management did threaten punishment of various sorts; and the new operator 2 did function as a straw boss. Therefore, to label the intervention as an exercise of managerial discipline that well may have involved these elements is supportable.

later were relabeled*1A and 2A, as they are designated here and in the 1978 article.

⁵ Whitehead, 1938, I:112, in part from log for August 4, 1927.

⁶ Operator 2's mother died on March 5, 1928, so this could not play a role in her selection for the experiment.

The Depression

A second major variable in Franke and Kaul's report is the occurrence of the great depression, described by Galbraith (1954:103) as beginning October 24, 1929—i.e., occurring during the time of experimental period 15 (September 2, 1929, to April 5, 1930). Wardwell's imputation that we claim effects of the depression upon "productivity increases beginning in 1927" is simply wrong, since it was used as a categorical variable arising with the beginning of the depression, which occurred 26% of the way through period 15. While the meaning of the depression to Western Electric managers and workers is open to some speculation, there were test room discussions of lay-offs by April 1930 and an economically-determined reduction in working hours to 40 hours per week beginning on May 5, 1930, with a "loss of security . . . quite evident in the records from now on" (Whitehead, 1938, I:148-9). "The last two years [sic] of the log [August 1930 to August 1932] are filled with preoccupations with respect to reduced weekly hours and 'lay offs'" (Whitehead, 1938, I:164). Careful reading of the Hawthorne records thus supports the validity of an independent variable representing the depression, inclusion of which then allows consideration of output rates during periods 15 through 23 (cf. Franke and Kaul, 1978:fn. 6).

Of course, any effect of the depression upon prior output rates is inconceivable, but perhaps hardly more so than is a justification for the abrupt halt in Roethlisberger and Dickson's (1939) treatment of the first relay experiment with period 13, ignoring the last 3 years and 10 months—11 experimental periods—of the experiment. There was even one further experimental period fully before the depression (period 14, over July and August 1929), which showed a reduced rate of output and was not considered in *Management and the Worker*. (However, at least some of the remaining eleven experimental periods were considered in the earlier work of Pennock, 1930; Mayo, 1933; and Whitehead, 1938.) Unexplained neglect of available experimental data is dubious at best, and different or additional results are often obtained through more complete or systematic inclusion (see examples in different settings by Barrett and Franke, 1970; Clark, 1961; and Franke et al., 1977).

In summary, careful perusal of recorded attitudes, behavior, and circumstances indicate the influence of "managerial discipline" and of the depression upon the first relay experiment, and both should be considered in any quantitative or qualitative appraisal of it. Nevertheless, the arguments above, supportive as they are of

Franke and Kaul's (1978) interpretations, are based largely upon a selection of anecdotal comments. A critical reader of the records of the Hawthorne experiments well may discover additional comments that lead to alternate interpretations. Quantitative analysis seems a useful supplement to such evidence, and is treated below.

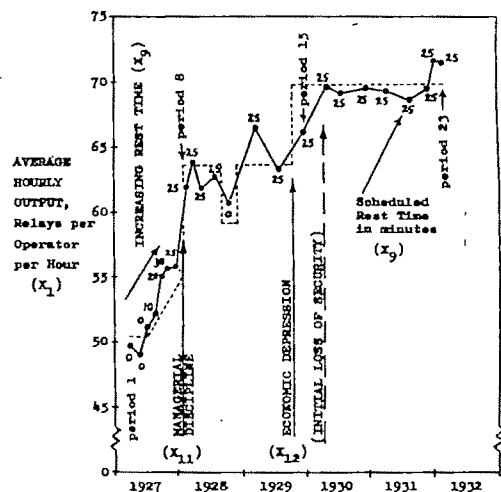
QUANTITATIVE ANALYSIS

Wardwell expresses concern over our focus upon tangible variables, to the exclusion of residual and qualitative explanations. It seems indeed that the major conclusions of the early Hawthorne researchers (and of most of those who followed) were that tangible independent variables such as rest periods, working hours, and pay incentives, had little effect upon output rates, and therefore that qualitative, intangible explanations were in order. Yet through the quantitative evaluation of these factors and the extension of test variables to include inadvertent but major and quite tangible occurrences in the experiment (which are authoritatively recorded by the experimenters as well as by some of the Harvard reporters of the experiment), it is possible to explain most of the variance in output quantity and quality for the group and for the individuals in the first relay experiment. It seems simply inappropriate to "explain" the output changes in the first relay experiment in terms of the intangible human relations effects noted as an "enlightenment" by Roethlisberger (1941:15-6), since little residual remains after applying a few quantitative variables of the experiment to the quantitative output evidence. If this is to be criticized, then at least a better argument should be made in particulars for any alternative way of thinking about the productivity changes.

In anyone's research, it is necessary to begin somewhere. Our work has begun with the major Hawthorne experiment, that in the first relay assembly test room. As Wardwell correctly states, there were other important studies at Hawthorne (cf. Franke and Kaul, 1978:Figures 1 and 2). But these, too, can be looked at more closely now. The second relay and mica splitting experiments are amenable to similar time-series analysis, as illustrated crudely in fn. 9 of the 1978 report. An exploratory study at the Worcester Polytechnic Institute already has yielded some results in explanation of output changes in the little-described illumination experiments; it shows statistically significant benefits of illumination as well as a "social hysteresis" effect of lesser response to reduction of positive factors in

production (cf. Wiljanen, 1979). Finally, investigation is just beginning of the long (ten months) 24th period of the first relay experiment. Since both the interviewing and the bank wiring experiment (which Wardwell suggests "led to the most significant conclusions to be drawn" from the entire Hawthorne research program") were nonreactive survey and observation, systematic quantitative interpretation could be more difficult, and Wardwell may be correct in suggesting that much will remain to "insight." Still, the daily and weekly data recently obtained for the bank wiring experiment (cf. fn. 3) may allow even in this case systematic analysis using a time-series approach such as that of Franke and Kaul (1978).

For the present case, the usefulness of quantitative analysis is well illustrated in refuting Wardwell's (1979) comment that: "If the change [replacing two of the five operators by two others] had been intended or viewed as a threat, then output should have immediately increased as the result of 'managerial discipline.' But that did not happen." But in fact it did. The results presented in Tables 2, 3, and 4 of Franke and Kaul (1978) do indicate an abrupt increase in productivity. The immediate effect of managerial discipline is shown even more clearly by a plot of the period-by-period output rates over time, as presented now in Figure 1. This graph of data from the earlier Appendix 1 shows an immediate and strong effect of the variable upon group output. Like



Note: X_1 , X_9 , X_{11} , and X_{13} are the symbols used in the regression analyses. The minutes of rest time per day (X_9) are shown for each period on the above plot (from 0 to 30 minutes). The dotted lines approximate the model 1 results for the group (cf. Franke and Kaul, 1978:Table 2).

Figure 1. Worker Productivity in Periods 1 to 23 of the First Relay Experiment at Hawthorne

effects of managerial discipline can be shown for each individual by plots of the individual output data from the earlier Appendix 2. Similarly, Wardwell's (1979) statement that "during periods 8 through 12 the hourly rates for all operators declined rather than increased" is incorrect, or at least misleading, as shown in the present Figure 1: group output rose twice and declined twice, with the larger of the declines (from period 11 to period 12) attributable to the elimination of rest periods.

Figure 1 reports mean output rates for each of 23 experimental periods, as represented by 23 dots connected with solid lines. Substantial within-period changes did occur (as also discussed by Parsons, 1974; 1978; with reference to a theory of gradual, feedback-induced output increase). However, net changes in productivity within periods were downward for nearly as many periods as they were upward (cf. Mayo, 1933:Plate VIII), so that the continued gradual increase in output rates sometimes attributed to the experiment is again not substantiated. Nevertheless, Wardwell's (1979) objection that "within-period changes are totally obscured by a statistical technique based on mean outputs for each period" is correct, and detailed day-by-day and week-by-week analyses should be undertaken.

In Figure 1 for the first seven periods, group hourly output responds positively to changes in minutes per day of scheduled rest time, except that output does not seem to rise much with more than 25 minutes of rest per day. Thus 25 minutes of rest were taken for the remaining experiment, except for period 12 (no rest). There is then an immediate response to "managerial discipline" (the replacement of two workers) at the beginning of period 8. A step level of higher production is maintained (with oscillation) from period 8 through period 14, until the depression early in period 15, when there begins a rise to a still higher and steadier level of output from period 16 to 23. The full-fledged effect of the depression seems to be delayed until period 16, when the operators heard of lay-offs, reinforced in period 17 by the operators' experience of a depression-related "loss of security." The positive response of the workers to economic adversity remains through period 23, with a slight unexplained rise in periods 22 and 23.⁷

These effects of rest, discipline, and depression are the same as model 1 of Franke and Kaul (1978), represented approximately by the dotted line in the present Figure 1. Whether we use the regression or the graphic method, the continuous effect of rest pauses and the

stepped effects of managerial discipline and the depression clearly are demonstrated. It is difficult to imagine that this demonstration, which is as strenuously objective as possible, arrived at through statistical analyses of historical productivity data, could lead Wardwell to conclude that Franke and Kaul's criticism of previous conclusions drawn from the Hawthorne experiments derives "from the ideological 'right.'"⁸ Recognition of the strong productivity effects of close managerial control and of economic adversity need not be equated with a "preference for" such conditions in the workplace, or even with an exclusive concern for productivity. Similarly, a study indicating the effectiveness of, say, bureaucracy, socialized medicine, or terror need not make the author a proponent of the phenomenon. Though the impact of the Hawthorne experiments can and will not be denied, to perpetuate findings no longer convincing hardly furthers the cause Wardwell seems to have at heart. Industrial democracy, participation, and quality of working life need not be sacrificed as goals in themselves, even if they are largely unrelated to subsequent productivity.

CONCLUSION

Wardwell agrees that the Hawthorne experiments have provided a foundation for much work in social science. But he does not find that our interpretations of those experiments, which differ from most of our predecessors, provide grounds for altered perspective. If our analyses were demonstrably incorrect or if there were more recent, substantial work confirming the earlier interpretations, Wardwell's objections certainly should not be brushed aside. In fact, however, he provides scant evidence that there are any major errors in the Franke and Kaul interpretations, and as indicated in the article there is much work elsewhere supporting our results.⁹

⁸ As noted by Franke and Kaul (1978:637), non-substantive criticism focused on ideology of the researchers has long plagued the Hawthorne studies. For example, Roethlisberger (1960:viii)

saw in the 1950s (the era of the cold war and the agonizing re-appraisals of intellectuals) a mounting concern with Mayo's ideological and personal beliefs. Was he for or against trade unions? Was he a fascist or a Communist? Was he preaching the gospel of Saint Luke or "Saint" Freud? Was he the arch priest of conservatism, the tool of business, and the exponent of the *status quo*? . . .

⁹ From the time at least of Fleishman et al. (1955) and Brayfield and Crockett (1955), and in later work through Vrcom (1964), Campbell and Dunnette (1968), Stogdill (1974), Locke (1976), and Locke and

⁷ All five operators were laid off in July and August of 1932, during the final period 24.

A clearer view of the Hawthorne studies and of the body of knowledge which has grown up partly dependent upon them may encourage us to do away with wishful thinking about social phenomena, and to realize that different aspects of industrial society do not necessarily exist in simple cause and effect relationships. Beyond the present, nonexistent humanitarianism-productivity relationship, one could point to the esteemed but equally fallacious assumptions that democracy causes industrial effectiveness (cf. Blau, 1956:80-3, 114-8; Dahrendorf, 1969:54; Franke, 1973), that an infusion of technology and capital investment is responsible for industrial development (cf. Clark, 1961; Franke, 1979), or that better nutrition leads to economic growth (Franke and Barrett, 1975). In all these cases, the testing of well-accepted theory using quantitative analysis can provide new insight into what really happens. If, as may result from the Hawthorne experiments, humanitarian objectives are pursued primarily for economic reasons, then the lack of an actual relationship is likely to frustrate either goal.

Since it is possible today to review the work of many of the pioneers of the social sciences and to reanalyze and replicate their evidence using recently developed techniques, new and sometimes contradictory results should be expected.

Richard Herbert Franke
Worcester Polytechnic Institute

REFERENCES

- Baritz, Loren
1960 *The Servants of Power: A History of the Use of Social Science in American Industry*. Middletown: Wesleyan University Press.
- Barrett, Gerald V. and Richard H. Franke
1970 "Psychogenic" death: a reappraisal." *Science* 167:304-6.
- Blau, Peter M.
1956 *Bureaucracy in Modern Society*. New York: Random House.
- Brayfield, A. and W. Crockett
1955 "Employee attitudes and employee performance." *Psychological Bulletin* 52:396-424.
- Campbell, John P. and Marvin D. Dunnette
1968 "Effectiveness of T-group experiences in managerial training and development." *Psychological Bulletin* 70:73-104.
- Clark, Colin
1961 *Growthmanship: A Study in the Mythology of Investment*. London: Institute of Economic Affairs.
- Dahrendorf, Ralf
1969 *Society and Democracy in Germany*. Garden City: Doubleday.
- Fleishman, E. A., E. F. Harris, and H. E. Burt
1955 *Leadership and Supervision in Industry*. Columbus: Bureau of Educational Research, Ohio State University.
- Franke, Richard Herbert
1973 "Critical factors in the post-war economic growth of nations: review of empirical studies and implications for participative organization." Pp. 107-19 in E. Pusić (ed.), *Participation and Self Management*, Vol. 5. Zagreb: University of Zagreb.
- 1979 "Investment for economic growth?" Paper presented, American Association for the Advancement of Science, Houston.
- Franke, Richard Herbert and Gerald V. Barrett
1975 "The economic implications of malnutrition: comment." *Economic Development and Cultural Change* 23:341-50.
- Franke, Richard Herbert and James D. Kaul
1978 "The Hawthorne experiments: first statistical interpretation." *American Sociological Review* 43:623-43.
- Franke, Richard Herbert, Edward W. Thomas, and Allen J. Queenen
1977 "Suicide and homicide: common sources and consistent relationships." *Social Psychiatry* 12:149-56.
- Galbraith, John Kenneth
1954 *The Great Crash*. Boston: Houghton Mifflin.
- Locke, Edwin A.
1976 "The nature and causes of job satisfaction." Pp. 1297-349 in Marvin D. Dunnette (ed.), *Handbook of Industrial and Organizational Psychology*. Chicago: Rand McNally.
- Locke, Edwin A. and David M. Schweiger
1979 "Participation in decision making: one more look." *Research in Organizational Behavior* 1:265-339.
- Mayo, Elton
[1933] *The Human Problems of an Industrial Civilization*. New York: Viking.
- Parsons, H. McIlvaine
1974 "What happened at Hawthorne?" *Science* 183:922-32.
- 1978 "What caused the Hawthorne effect? a scientific detective story." *Administration and Society* 10:259-83.
- Pennock, G. A.
1930 "Industrial research at Hawthorne: an experimental investigation of rest periods, working conditions and other influences." *Personnel Journal* 8:296-313.
- Roethlisberger, F. J.
1941 *Management and Morale*. Cambridge, Ma.: Harvard University Press.
- 1960 "Introduction." Pp. vii-xvi in Elton Mayo, *The Human Problems of an Industrial Civilization*. New York: Viking.
- 1977 *The Elusive Phenomena: An Autobiographical Account of My Work in the Field of Organizational Behavior at the Harvard Business School*. Ed. by George F. F.
- Schweiger (1979), human relations benefits such as increased consideration and participation, morale, and worker solidarity have not been found to have much general effect on work productivity.

- Lombard. Cambridge, Ma.: Harvard University Press.
- Roethlisberger, F. J. and William J. Dickson
1939 *Management and the Worker*. Cambridge, Ma.: Harvard University Press.
- Snow, C. E.
1927 "Research on industrial illumination: a discussion of the relation of illumination intensity to productive efficiency." *Tech Engineering News* 8:257, 272, 274, 282.
- Stogdill, Ralph M.
1974 *Handbook of Leadership*. Glencoe: Free Press.
- Turner, C. E.
1933 "Test room studies in employee effectiveness." *American Journal of Public Health* 23:577-84.
- Vroom, Victor H.
1964 *Work and Motivation*. New York: Wiley.
- Wardwell, Walter I.
1979 "Critique of a recent professional put-down of the Hawthorne researches." *American Sociological Review* 44:858-67.
- Whitehead, T. N.
1938 *The Industrial Worker*. 2 Vols. Cambridge, Ma.: Harvard University Press.
- Wiljanen, Laurel (now Laurel Wiljanen Neece)
1979 *Lighting the Way: First Quantitative Analysis of the Hawthorne Illumination Experiments of 1924 to 1927*. Unpublished undergraduate dissertation (major qualifying project). Department of Management, Worcester Polytechnic Institute.
- Wrege, Charles D.
1976 "Solving Mayo's mystery: the first complete account of the origin of the Hawthorne studies—the forgotten contributions of C. E. Snow and H. Hibarger." *Academy of Management Proceedings*, 36th Annual Meeting:12-6.
- 1979a "Discovering Hawthorne's roots: the search for and discovery of the original records of the Hawthorne illumination tests." Manuscript.
- 1979b "In defense of Hawthorne: a re-evaluation of the criticisms of Carey and Parsons." Manuscript.

ON GINI'S MEAN DIFFERENCE AND GINI'S INDEX OF CONCENTRATION

(COMMENT ON ALLISON, ASR
DECEMBER, 1978)

Allison's (1978) treatment of the Gini's Mean Difference and the Gini Index of Concentration contains some errors. Below I provide correct definitional formulas as well as some computationally simpler equivalent expressions for both the Gini's Mean Difference (GMD) and the Gini Index of Concentration (GIC), and I correct other errors that resulted from use of inaccurate formulas.

1. The Definitional Formulas

Allison (1978:867) states correctly that the Gini's Mean Difference is "the average absolute difference between all pairs of individuals" and that the Gini Index of Concentration is the Gini's Mean Difference divided by twice the arithmetic mean. But his formula (3) is incorrect. The correct formula for the Gini's Mean Difference is

$$GMD = \frac{\sum_{i < j}^N \sum_{j=1}^N |x_i - x_j|}{N(N-1)/2} \quad (a)$$

(see, for example, Johnson and Kotz, 1970:67). In this formula, the numerator is the summation of all the pairwise absolute differences, and the denominator is the number of pairs (i.e., the number of combinations of N things taken two at a time). Notice that although Allison correctly described the GMD, he used the wrong denominator; that is, he used N^2 instead of using the number of pairs in a population of size N, namely, $(N(N-1)/2)$, as in formula (a) or instead of using twice the number of pairs, namely, $(N(N-1))$, as in formula (c) below.

The correct definitional formula for the Gini Index is

$$GIC = \frac{\sum_{i < j}^N \sum_{j=1}^N |x_i - x_j|}{N(N-1)/2} \bigg/ 2\mu. \quad (b)$$

Since the Gini's Mean Difference is the arithmetic mean of all the pairwise absolute differences, it may be regarded as the expected value of the difference between two random individuals. As Atkinson (1975:45) puts it,

Suppose we choose two people at random from the income distribution, and express the difference between their incomes as a proportion of the average income, then this difference turns out to be on average twice the Gini coefficient: a coefficient of 0.4 means that the expected difference between two people chosen at random is 80 percent of the average income.

2. Alternative Computational Formulas

It is useful to examine several equivalent expressions for any given definitional formula not only because one among them may be incomparably easier to calculate (and hence become the preferred "shortcut" method) but also because these restatements, often revealing the "inner workings" of the formula, lay bare the underlying relations between its constituent parts.

Allison (1978:867) offers an alternative expression in formula (4), but (4) is incorrect. There are many computationally equivalent formulas for the Gini's Mean Difference and the Gini Index of Concentration, and we now look at a few such equivalent expressions.

a. *The double summation formula.* The formula most often encountered in the statistical literature is

$$\text{GMD} = \frac{\sum_{i \neq j}^N \sum_{j=1}^N |x_i - x_j|}{N(N-1)} \quad (c)$$

(see, for example, Kellerer, 1968:239; and van der Vaart, 1968:294,297). In this formula, the notation on the double summation directs the user to sum, for each of the x_i , the absolute difference between it and each one of the remaining $N-1$ scores, thereby counting each pairwise absolute difference twice; the denominator then is adjusted to twice the number of pairs or $N(N-1)$. This formula seems to me to have little to offer by way of either enlightenment or ease of calculation.

b. *The symmetric pairs formula.* Johnson and Kotz (1970:67) provide an equivalent expression that does both illuminate the behavior of the Gini's Mean Difference and lighten the calculation task:

$$\text{GMD} = \frac{4}{N(N-1)} \sum_{j=1}^{N/2} \left[\frac{1}{2} (N+1-j) \cdot (X_{N-j+1} - X_j) \right] \quad (d)$$

where the X_j are the order statistics (arranged in ascending order of magnitude) and the j are the rank-order statistics. By defining the order statistics such as $x_1 \leq x_2 \leq \dots \leq x_N$, this formula can handle continuous as well as discrete data (see Johnson and Kotz, 1969:27; Johnson and Kotz, 1970:2; Greenberg, 1968:183; and Allison, 1978:866). The rank-order statistics are the set of positive integers from 1 to the population size N (see David, 1968:196-7).

This formula can be restated in an even simpler version, a version that highlights the symmetric pairs and preserves the original denominator, that is, the number of pairs in the population:

$$\text{GMD} = \frac{1}{N(N-1)/2} \sum_{j=1}^{N/2} [(N+1-2j) \cdot (X_{N+1-j} - X_j)] \quad (e)$$

The terms in the summation are the absolute differences between the elements of some very special pairs—those pairs whose elements

have rank-order statistics that are equidistant from the rank-order statistic of the median score—and the weight of these special pairs varies with the distance of their rank-order statistics from the median's rank-order statistic, being largest for the pair of extreme scores ($X_N - X_1$). In fact, the weight attached to each absolute difference in the summation is itself the absolute difference between the rank-order statistics of the elements of the pair. That is to say, each of the special symmetric pairs in the summation is represented by the product of the absolute difference between the order statistics and the absolute difference between the rank-order statistics.

Thus, we may remark that the Gini's Mean Difference is exquisitely sensitive to the range of the distribution and to the dispersion about the median.

By algebraic manipulation of formula (e), we can obtain many equivalent expressions, each highlighting an interesting aspect of the Gini's Mean Difference. For example, I have obtained a formula that expresses the numerator of formula (e) for the GMD as a joint function of the signed deviations of the order statistics from the arithmetic mean and the signed deviations of the corresponding rank-order statistics from the median's rank. I have obtained another formula that expresses the numerator as a joint function of the signed deviations of the order statistics from the median and the signed deviations of the corresponding rank-order statistics from the median's rank. But due to space limitations, I present only two more equivalent expressions for the Gini's Mean Difference.

c. *The simplest expression.* Both the formulas that express the Gini's Mean Difference in terms of the arithmetic mean and in terms of the median reduce to the following formula, which I regard as computationally simplest:

$$\text{GMD} = \frac{2 \sum_{i=1}^N ix_i - \bar{x} N(N+1)}{N(N-1)/2} \quad (f)$$

where the x_i are the order statistics and the i are the rank-order statistics. The corresponding formula for the Gini Index of Concentration is even simpler:

$$\text{GIC} = \frac{2 \sum_{i=1}^N ix_i}{N(N-1)\bar{x}} - \frac{N+1}{N-1} \quad (g)$$

This may be the formula that Allison intended to give in his incorrect formula (4).

d. *The proportions formula.* By algebraic

manipulation of formula (f) and using the formula for the sum of the set of positive integers from 1 to N , I have also obtained a formula that uses the proportions occurring above and below each score instead of the rank-order statistics. This formula can then be restated to give the correct expression for the Gini's Mean Difference of a pooled population consisting of several equal distributions, each distribution located at a different point along the x axis. Allison (1978:876-7) discusses this special case, but his formula (24) for the Gini Index of Concentration is incorrect. The correct formula, using his notation (i.e., "where q_j is the proportion that are in groups with means less than \bar{X}_j and r_j is the proportion in groups with means greater than \bar{X}_j "), is:

$$\text{GIC} = \frac{\sum_{j=1}^J \bar{X}_j p_j (q_j - r_j)}{\bar{X}} \times \frac{N}{N-1}. \quad (\text{h})$$

That is, Allison's formula (24) was lacking the factor $(N/(N-1))$. This formula can also be stated in terms of frequencies rather than proportions.

3. The Upper Bound of the Gini Index of Concentration

Allison (1978:869) states that "in finite populations or samples, the Gini index has an upper bound of $1-1/n$." That is incorrect. The upper bound is indeed "reached when one individual has everything and everyone else has nothing." But the value of the Gini Index in such a case is independent of N and is exactly one. Using formula (e), we obtain this result as follows:

$$\text{GIC} = \frac{(X_N - 0)(N-1)}{N(N-1)/2} \div 2\bar{x}.$$

Since the amount held by the N th individual is also the total amount,

$$\text{GIC} = \frac{2\sum x}{N} \times \frac{1}{2\bar{x}},$$

and since the total amount divided by N is equal to the arithmetic mean,

$$\text{GIC} = 1.$$

4. Sensitivity to Transfers

Allison (1978:868) states that the "Gini index is peculiar in that its sensitivity to transfers depends on individuals' ranks rather than their numeric scores" and offers an algebraic ex-

pression for the difference between the values of the Gini Index before and after a transfer of h units from x_i to x_j . But formula (9) is accurate only for the special case in which the rank-order statistics of the parties to the transfer do not change after the transfer. Often the parties to the transfer do acquire new ranks after the transfer; also, a change in the rank of either party to the transfer may occasion a change in rank for one or more other individuals. Using formulas (f) and (g), we see that these changes must be reflected in the summation term in the numerator, for every term in the summation corresponding to an individual whose rank or whose score changes also must change.

The sensitivity to transfers is an appealing way of examining sensitivity to the shape of a distribution. For example, notice how the bar graph of a discrete distribution changes as a result of just one transfer: four of the bars or rods change height.

5. The Gini's Mean Difference and the Variance

Allison (1978:870) suggests defining "a general family of inequality measures that includes both the Gini index and the coefficient of variation," and offers a formula (12) to show their relationship. But formula (12) is based on formula (3), which is incorrect, and hence does not apply to the Gini Index.

It should be pointed out here that while Allison's (1978:870) formula (11) for the population variance is correct, his verbal description refers to quite a different formula. Formula (11) for the population variance is the sum of the pairwise squared differences, divided by N^2 , or alternatively, and analogously to formula (c) above, twice the sum of the pairwise squared differences, divided by $2N^2$. His verbal description, "one-half the average squared difference between all pairs of individuals," correctly describes another formula, the formula for the sample's minimum variance unbiased estimator of the population variance, when the population mean is unknown. Thus, while the numerator, the sum of the pairwise squared differences, is the same in both formulas, the denominator is different; in the formula for the population variance the denominator is N^2 , and in the formula for the sample estimator of the population variance, population mean unknown, the denominator is $(N(N-1))$. (See van der Vaart, 1958:295-6.)

What is the relation between the variance and the Gini's Mean Difference? van der Vaart (1968:253-5) shows that the Gini's Mean Difference and the variance are distribution-specific functions of each other. That is, there

is no general relation between them. If we compare distributions of different functional forms, we well may find that one has the smaller variance but another has the smaller Gini's Mean Difference. Only within distributional family are all measures of inequality monotonic functions of each other.

Moreover, there is an interesting case in which the variance remains constant while the GMD varies. Consider a discrete distribution of any size N and any shape whatsoever, with a given value of the population variance and a given value of the Gini's Mean Difference. If we then pool k identical distributions, the variance remains constant but the Gini's Mean Difference grows smaller. This is because the Gini's Mean Difference is sensitive to every pair, and introducing identical scores means introducing some pairwise differences of value zero to the numerator.

6. An Interpretative Note

Measures of inequality differ from each other in many ways. In particular, their sensitivities to the location, scale, and shape of the distribution, to whether the data are treated as discrete or continuous, to whether the set of data is regarded as a sample or as a population, and to the size of the sample or population can vary greatly. It is most important to become familiar with the properties of many measures of inequality, to learn their peculiarities and idiosyncrasies, to come to know how they behave under a variety of conditions. For the task of the social scientist is not so much to choose among them one to use in every case. Rather the task is to fit the choice of inequality measure to the particular problem under study. The task is to find for each social dependent variable of interest that particular manifestation of inequality that is most highly related to it, and to find for each manifestation of inequality the best predictor variables. It well may be the case that some social phenomena will be seen to vary with the Gini's Mean Difference, others with the Gini Index of Concentration, and others with some other of a large number of measures of inequality.

Guillermina Jasso
Immigration and Naturalization Service
U.S. Department of Justice

REFERENCES

- Allison, Paul D.
1978 "Measures of inequality." *American Sociological Review* 43:865-80.
- Atkinson, A. B.
1975 *The Economics of Inequality*. London: Oxford University Press.
- David, Herbert A.
1968 "Nonparametric statistics: methods." Pp. 196-201 in David (ed.), *International Encyclopedia of Social Sciences*, Vol. 11. New York: Macmillan.
- Greenberg, Bernard G.
1968 "Nonparametric statistics: order statistics." Pp. 182-90 in David L. S. *International Encyclopedia of Social Sciences*, Vol. 11. New York: Macmillan.
- Johnson, Norman L. and Samuel Kotz
1969 *Distributions in Statistics: Discrete Distributions*. New York: Houghton Mifflin.
1970 *Distributions in Statistics: Continuous Variate Distributions*, 1. New York: Houghton Mifflin.
- Kellerer, Hans
1968 "Statistics, descriptive: location dispersion." Pp. 232-40 in David L. S. *International Encyclopedia of Social Sciences*, Vol. 15. New York: Macmillan.
- van der Vaart, H. Robert
1968 "Variances, statistical study of." Pp. 292-300 in David L. Sills (ed.), *International Encyclopedia of the Social Sciences*, Vol. 16. New York: Macmillan.

REPLY TO JASSO*

Jasso claims that all my formulas for index are erroneous because they have the denominator rather than $N(N-1)$. Both versions of the Gini index have their way into the statistical literature; neither one can be said to be incorrect. Nevertheless, for reasons I will explain most sociologists, economists and statisticians who have discussed the Gini index have chosen the definition that is identical or equivalent. (See, for example, Rothschild and Stiglitz, 1973; Dasgupta et al., 1973; Fienberg, 1973; Blau, 1977; Waldman, 1977).

The alternative formulas stem from the ambiguity that arises in defining the Gini index for finite populations. Verbally, the Gini index may be defined as the average of the squared differences between all pairs of scores, divided by twice the mean (a definition which I accept). The question comes down to computing the average, how many pairs of scores are there? The answer depends on whether we allow a score to be paired with itself or only consider pairs of distinct scores. This dilemma which has been aptly stated by Jasso and Stuart (1977:47-8):

[Gini's coefficient of] mean difference is the average of the differences of all the possible pairs of variate values, taken regardless of significance.

* Direct all communications to: Paul Allison, Department of Sociology, Cornell University, Ithaca, NY 14853.

coefficient with repetition each value is taken with itself, adding of course nothing to the sum of deviations, but resulting in the total number of pairs being N^2 . In the coefficient without repetition only distinct values are taken, so that the number of pairs is $N(N-1)$.

Note that this distinction is closely related to the question of sampling with or without replacement. As Jasso observes, Gini's mean difference (the numerator of the Gini index) may be interpreted as the expected value of the absolute difference between two randomly chosen individuals. This formulation is ambiguous, however, since it does not indicate whether or not the first randomly chosen individual is "replaced" before choosing the second. If replacement occurs, we then have the possibility that the same individual will be drawn twice, in which case the difference will be zero.

Intuitively, it might seem more reasonable to exclude pairs in which a score is paired with itself because the difference is *necessarily* zero. Yet there are at least two reasons for including such pairs and, hence, using the definition with N^2 in the denominator. First, the Gini index often is defined as twice the area between the Lorenz curve and the line of perfect equality (see section 4 in my original article). In order for the algebraic formula to be consistent with this geometric definition, it is necessary that the denominator have N^2 rather than $N(N-1)$. Second, Jasso's version of the Gini index does not possess an appealing property which Sen (1973) calls the population symmetry axiom. This notion can be expressed as follows. Suppose we have two populations of equal size and identical distributions of income. Using either formula, the Gini index will be the same for both populations. But what if we combine the two populations? Population symmetry requires that the Gini index for the combined population be the same as the Gini index for each population taken separately. My formula has this property but Jasso's gives a lower value for the combined population.

Both of these points can be demonstrated heuristically by considering upper bounds on the Gini index. As Jasso shows, her formula has an upper bound of one, while my formula has an upper bound of $1 - 1/N$. Thus, in a two-person population in which one person has all the income, my formula gives a Gini index of one-half while Jasso's formula gives a value of one. Consider the Lorenz curve for this two-person population (Figure 1). Since the total area of the square in Figure 1 is one, the area between the Lorenz curve and the line of perfect equality must be one-fourth. Hence, the Gini index is one-half, which is consistent with my formula but not with Jasso's.

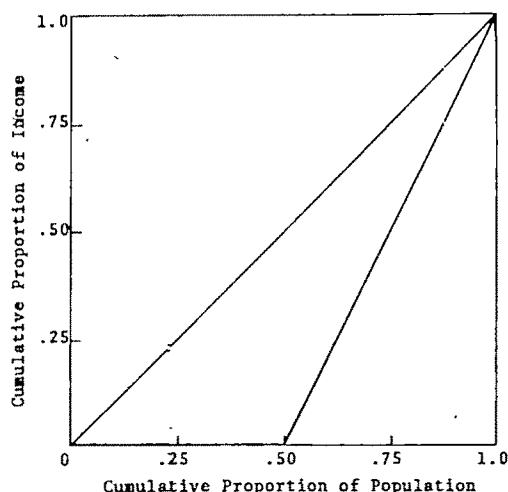


Figure 1. Lorenz Curve for a Two-Person Population

Now suppose we have another two-person population with the same distribution of income. If we combine these two groups, we get a four-person population in which two people have no income and two people have equal positive shares. Since a single person no longer controls all the income, Jasso's formula does not reach its upper bound of one. It is not difficult to show, however, that my formula still gives a Gini index of one-half.

Sections 1, 2, 3 and 5 of Jasso's comment all rest on the presumption that N^2 is the wrong denominator. In section 4, however, she correctly identifies a problem with my formula (9) which gives a change in the Gini index resulting from a transfer from one individual to another. Specifically, the formula is only valid for the special case in which the transfer is not so great as to change the rank order of either individual.

In section 6, Jasso argues that different measures of inequality may be appropriate for different substantive problems. This is good advice, but Jasso goes too far when she suggests that the choice be based principally on observed covariation ("The task is to find for each social dependent variable of interest that particular manifestation of inequality that is most highly related with it . . ."). In fact, a strictly empirical approach can easily produce misleading or artifactual results. Suppose, for example, that we used the standard deviation to compare income inequality across different census tracts. Almost surely we would find a high correlation between the standard deviation and the mean or any other variable strongly associated with the mean. But this is merely a consequence of the scale dependence of the standard deviation. The more appropriate

ate scale invariant measures like the Gini index or the coefficient of variation probably would produce lower correlations, but this is hardly a mark against them. While empirical results should not be discounted, the first task is to identify those measures on inequality that are *theoretically* appropriate for the problem at hand.

Before concluding, I would like to point out a typographical error that occurred in my formula (17) for Atkinson's measure of inequality. That formula should have been:

$$A = 1 - \left[\frac{1}{n} \sum_{i=1}^n \left(\frac{x_i}{\mu} \right)^{1-e} \right]^{\frac{1}{1-e}}$$

In the published version, the $1/n$ was transposed to $n/1$ and placed outside the brackets.

Paul D. Allison
Cornell University

REFERENCES

- Blau, Peter M.
1977 "A macrosociological theory of social structure." *American Journal of Sociology* 83: 26-54.
- Dasgupta, Partha, Amartya Sen and David Starrett
1973 "Notes on the measurement of inequality." *Journal of Economic Theory* 6:180-7.
- Kendall, Maurice and Alan Stuart
1977 *The Advanced Theory of Statistics*. Vol. 1. 4th ed. New York: Macmillan.
- Ray, James Lee and J. David Singer
1973 "Measuring the concentration of power in the international system." *Sociological Methods and Research* 1:403-37.
- Rothschild, Michael and Joseph E. Stiglitz
1973 "Some further results on the measurement of inequality." *Journal of Economic Theory* 6:188-204.
- Sen, Amartya
1973 *On Economic Inequality*. New York: Norton.
- Waldman, Loren K.
1977 "Types and measures of inequality." *Social Science Quarterly* 58:229-41.

DETERRENCE AND SOCIAL CONTROL: A REPLY TO GRASMICK AND MCLAUGHLIN*

(ASR APRIL, 1978)

I am taking this opportunity to correct Grasmick and McLaughlin's (1978) misleading and erroneous comments on my article on de-

terrence theory (Silberman, 1976). These comments were based on misinterpretations and distortions of the findings presented in my article and in some of the sources they relied on.

Grasmick and McLaughlin properly place my article on deterrence theory within the general framework of the study of social control. Although they are correct when they assert that this article represents the first deterrence research to be published in the *ASR* or *AJS*, it should be pointed out that it is not the first research on the role of coercion in the social control process published in the *ASR*. (The *AJS*, I believe, historically has avoided this area of research.) A few articles expressing two different, if not competing, conceptualizations of the role of coercion in society have been published in the *ASR*. Articles written within, or influenced by, the framework of Etzioni's (1961) compliance theory were published in the late sixties (see Julian, 1966; Adamek and Dager, 1968; Warren, 1968). These articles focused on the distribution of conforming and alienative responses to the use or threatened use of coercive power. On the other hand, Snyder and Tilly (1972), employing a conflict perspective, viewed the use or threatened use of coercive power as a central feature of the struggle among competing groups for control over governmental institutions. In other words, there is a growing, empirically grounded, social control literature, of which deterrence research is a "significant" part. Deterrence research (my own included) focuses on the conforming response to coercive power under specified conditions. Of equally important interest in a theory of social control are studies of the alienative response to coercive power, the use of coercion in response to alienation, and the use of coercion as an expression of political conflict.

In order to be perfectly clear about the source of disagreement between myself and my commenters, I shall proceed by listing and discussing each point in the sequence presented in the review.

- (1) Crime statistics do reveal this pattern of zero-order correlations [between severity of punishment and crime rates only for homicide], but Silberman fails to note that for nearly all major felonies there is a substantial negative zero-order correlation between certainty and severity among aggregates. Logan (1972) discovered that when certainty (conviction rate) is controlled, severity (median sentence) has a weak to moderate negative partial correlation with the crime rate for nearly all major felonies. (p. 273)

A closer reading of Logan's (1972) work reveals substantial and significant partial corre-

* Direct all communications to: Matthew Silberman; Department of Sociology; Bucknell University; Lewisburg, PA 17837.

lations between severity and crime rate for only *two* offenses, with certainty of punishment controlled for: homicide and assault. Logan's analysis of the correlations between severity and crime rate under conditions of high and low certainty yields consistent negative correlations of substantial magnitude *only for homicide*. Furthermore, the Logan study is a replication of an earlier one by Tittle (1969) which I did cite in my article (Silberman, 1976:443-4). Tittle (1969:419) points out that under "constant levels of certainty . . . severity of punishment has little consistent independent or additive effect." The zero-order negative correlation between certainty and severity among (state level) aggregates reported by Logan (1972:70), but not by Tittle (1969:422), has little bearing on our further understanding of deterrence. The existing evidence, including that which Grasmick and McLaughlin cite, could hardly support their misleading conclusion that severe punishment is a deterrent for "nearly all major felonies." In fact, the evidence, my own included, supports the notion that to the extent that severe punishment acts as a deterrent, its effects are limited to crimes against persons (Silberman, 1976:447, 458-9).

(2) This finding, that aggregates which have severe penalties tend to have low conviction rates, has been of interest to researchers (see Bailey and Smith, 1972). (p. 274)

The above statement is terribly misleading. Bailey and Smith's study is not on the deterrent effects of severity of punishment. Their study examines the relationship between the severity of punishment and its certainty. They may be "interested" in that aspect of deterrence theory which suggests that severe punishment deters crime (Bailey and Smith, 1972:538), but they do no research on the subject.

(3) Ross (1976) has proposed a hypothesis which he calls the "neutralization of severe sanctions" to explain this kind of phenomenon. (p. 274)

The "kind of phenomenon" that Grasmick and McLaughlin are trying to explain is the alleged interaction of severity and certainty of punishment in effecting reduced crime rates at the aggregate level. Ross' (1976:404) argument is *not* that severity of punishment has a deterrent effect under specified levels of certainty of punishment, but that increasingly severe official penalties are *neutralized* by discretionary actions at various stages of the criminal justice process. Whereas this may account for a negative correlation between severity and certainty of punishment, Ross (1976:404) points out that his analysis "failed to produce evidence that the change [unusually stringent penalties] promoted higher safety." He later (1976:412)

adds, "In none of the studies cited could any deterrent effect of increased penalties be proved." Since Ross concludes that in the area of traffic safety there is no evidence to support the deterrence argument as far as severity of punishment is concerned, with or without controlling for certainty of punishment, I must conclude that Grasmick and McLaughlin have misinterpreted the findings and implications of the Ross study.

(4) The "credibility of severe sanctions" hypothesis has been offered at the individual level in previous writings (see Tittle and Logan, 1973:384), but Silberman does not test it. This hypothesis states that perceived severity of punishment has a deterrent effect only when the perceived certainty of punishment is high. . . . Since the publication of Silberman's article, Teevan (1976) has presented evidence supporting this hypothesis. (p. 274)

Tittle and Logan (1973:384) state that "sanctions may have some deterrent effect when the certainty of imposition is reasonably high but that severity of sanctions in the absence of certainty has little bearing on deviance." However, the evidence to support this hypothesis is weak. The Ross et al. (1970) study cited by Tittle and Logan demonstrates the effectiveness of legal reform on accidents due to drunk driving, but the certainty of detection and severity of sanctions were increased simultaneously. Consequently, it is not possible to determine whether it is certainty alone, or severity alone, or the combination of both which deterred drunk driving.

The Teevan (1976) study presents far less support for this hypothesis than Grasmick and McLaughlin would have us believe. The zero-order relationship between perceived certainty and the likelihood of committing two offenses, marijuana use and shoplifting, are described as significantly negative (but weak) and nonsignificant, respectively. Teevan (1976:157) also reports that there is "no support" for the severity hypothesis. Only the gammas describing the negative relationships between perceived severity and the likelihood of committing the two offenses for those "who perceive moderate or higher certainty of punishment" are reported. As Teevan points out (1976:157), these relationships are *not significant* since gammas "are sensitive to small N's and unequal marginals and should be *interpreted with caution*" (emphasis mine). A further note of caution: the relationship between perceived severity and criminal behavior for those who perceive low certainty of punishment is not reported or described for either offense. This selective reporting of his results makes Teevan's article difficult to evaluate. How "credible" is an hypothesis based upon such evidence?

I did not report any evidence to support an

interaction model testing the "credibility" hypothesis, because there was no such evidence to report. A test of the interaction of certainty and severity on criminal involvement using the procedures followed in the studies cited above is presented in Table 1. Just as the zero-order correlation between severity and criminal involvement in general is nonsignificant and positive (as Grasmick and McLaughlin note on p. 274), the correlations between severity and criminal involvement under conditions of high and low certainty are also nonsignificant and positive. A further examination of the evidence for specific offenses reveals no support for the credibility hypothesis (see Table 1).

(5) Silberman's measure of perceived severity of legal punishment seems [sic] invalid. . . . His measure is whether or not the respondent believed he would receive the state's maximum penalty if convicted of committing the offense. But, there is evidence from other research (California Assembly, 1968) that people vary in what they believe is the legal maximum penalty for particular offenses, and Silberman's measure does not take into account this variation. (p. 274)

There are three types of measurement validity (see Phillips, 1971:197-201): (a) face validity, the measure clearly initiates what is intended "on the face of it," as in an operational definition; (b) criterion validity, the measure correlates with another "accepted" measure of the same phenomenon; and (c) construct validity, the measure yields the expected theoretical prediction; i.e., it yields the same predictions as other measures of the same phenomenon. Grasmick and McLaughlin, assuming that "Silberman's" measure does not differentiate between those who may perceive the maximum penalty to be a \$100 fine and those who perceive the maximum to be six months in jail, limit their criticisms to the first

type. I will address this issue as well as the other two.

First, it should be pointed out (as I did in my article; see Silberman, 1976:444) that the measure of perceived severity is not "mine," but one used in previous research (see Waldo and Chiricos, 1972:524-6, for a full discussion of the rationale behind this measure). On its "face," this measure is designed to evaluate the *relative* severity of the perception of the threat of punishment, regardless of the *accuracy* of threat perception. What Grasmick and McLaughlin would have us do is introduce the "accuracy" dimension into the measure. It would make sense to introduce this dimension as a *separate variable* in the analysis, rather than confound the measurement of perceived severity. In discussing future research, I point out (Silberman, 1976:450) that the relationship between actual and perceived threats of punishment must be taken into account in order to understand fully the deterrence process. Accuracy of perception should be an important intervening variable in this process.

Since there is little consensus in the deterrence literature regarding an "accepted" measure of perceived severity, it is difficult to assess the criterion validity of the measure used in my study. The fact that it is almost identical to the measure used in the Waldo and Chiricos (1972:531) study lends it some credibility. The questions were identical: "If you were convicted of committing [offense], how likely would you be to get the maximum [state] penalty?" However, in their study, three choices were available to the respondents, "likely," "50/50," and "unlikely," whereas in my study, four choices were available, "very likely," "likely," "unlikely," and "very unlikely." It is reasonable to assume that were both measures used in the same study, the

Table 1. Point-Biserial Correlations between Severity Index and Criminal Involvement with Certainty Index Controlled for

	Without Control ^a (N=174)	Low Certainty ^b (N=84)	High Certainty ^b (N=89)
Criminal Involvement Index	+.10	+.15	+.10
Specific Offenses			
Assault	-.11	-.13	-.06
Hard Drugs	+.06	+.14	+.00
Petty Theft	+.04	+.14	-.05
Vandalism	+.05	+.11	+.04
Shoplifting	+.09	+.15	+.02
Drunk and Disorderly	+.09	+.08	+.13
Premarital Sex	+.01	+.04	-.01
Marijuana Use	+.06	+.06	+.08
Drinking Under Age	+.21	+.15	+.26

^a See Table 2, p. 447 in original article.

^b This variable is dichotomized above and below the mean.

correlation between them would be very strong.

As far as construct validity is concerned, the predicted effect of perceived severity on criminal involvement is generally consistent with findings using similar or other measures of perceived severity and measures of actual severity of punishment. Such inconsistencies that do exist can be resolved on theoretical and methodological grounds (see Silberman, 1976:458-9). In general, it seems that severity of punishment is associated with the deterrence of crimes against persons under specific conditions.

(6) He [Silberman] offers the hypothesis that a high level of involvement with such peers [who engage in criminal behavior] . . . "may reduce the effect of threat of punishment" (p. 443), but, offers no rationale for the hypothesis. (p. 274)

This statement is taken completely out of context, and consequently, misrepresents what I wrote. In discussing untested "theoretical speculation about the nature of the interaction among variables associated with the deterrence of criminal behavior" (Silberman, 1976:443), I cite Tittle and Rowe (1974:461) who wrote that " 'differential association' might be considered a condition which reduces fear of sanction." My full statement was that "*differential association*, the process by which individuals learn criminal behavior through involvement with others who define such behavior favorably, *may reduce the effect of the threat of punishment*" (Silberman, 1976:443; emphasis added). Since no support was found for this argument, i.e., the effect of the interaction between certainty of punishment and involvement with criminal others on the degree of criminal involvement was not significant (see Silberman, 1976:450, Table 4b), no further attention was paid to this argument in the article.

(7) Three hypotheses concerning characteristics of peers as a conditional variable have appeared in the literature, and each of these focuses on the role of threat of social disapproval from peers as a mechanism of social control. (p. 274)

After recognizing correctly that the variable *peer involvement* used in my study was a measure of "involvement with peers who engage in criminal behavior" (p. 274), Grasmick and McLaughlin conveniently redefine peer involvement in terms of the absence of the "threat of social disapproval" from "conventional" others (p. 275). Instead of pointing out that I did not measure "threat of social disapproval," my findings were distorted to test hypotheses they were not designed to test. The threat of disapproval from "conventional" others is surely not equivalent to the absence of encouragement by criminally involved

others to engage in criminal behavior. In fact, we can easily imagine circumstances in which individuals simultaneously experience support for "criminality" and "conventionality" from criminally involved and conventional "peer" groups, respectively.

Consequently, Grasmick and McLaughlin's entire discussion of the "hypotheses" and their reanalysis of the effects of the interaction between peer involvement and certainty of punishment (pp. 274-6) and the interaction of peer involvement and moral commitment (p. 277) on criminal involvement is rendered meaningless.

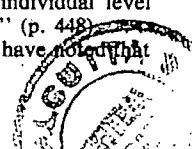
(8) Silberman's test of the interaction of certainty and peer involvement is confounded by a simultaneous control for morality. . . . Silberman's test of the proposed conditional relationship [the interaction of moral commitment to the law and threat of legal punishment in the deterrence process] is confounded by a control for another variable [Peer Involvement]. (p. 275)

Grasmick and McLaughlin apparently do not know how to interpret analysis of variance. If they had reported the findings presented in Table 4b (Silberman, 1976:450), they would have noted that their "conclusions" (based on three lower-order tables "reconstructed" from my original table) concerning the "additive" effects of certainty and peer involvement (Table 1, p. 275), the interaction effect of moral commitment and certainty (Table 2, p. 276), and the interaction effect of moral commitment and peer involvement (Table 3, p. 277) were redundant. Table 4b, a saturated model of the three-way analysis of variance for three dichotomous independent variables, reveals that there is no significant interaction between certainty and peer involvement, nor is there a significant three-way interaction among morality, certainty and peer involvement. The "main" effects of morality, certainty, and peer involvement on criminal involvement are all statistically significant, as are the interaction effects of morality and certainty, and morality and peer involvement. The advantage of the "simultaneous" control for third variables is the enhanced ability to explain the interrelationships among all the variables. Furthermore, as we have seen, it is a far more efficient way to present the data. It is only because there are "simultaneous" controls that we can conclude that moral commitment interacts *independently* with certainty and peer involvement to affect the degree of criminal involvement.

(9) Silberman commits several serious errors in the use of path analysis. . . .

(a) he claims that . . . [the individual level data] "fit a causal chain model" (p. 448)

(b) Silberman at least should have noted that



path analysis assumes all effects of independent variables are additive. . . .

(c) In the offense-level path diagram (p. 452), morality suddenly becomes an intervening variable between certainty and percent committing the offense, while in the individual-level diagram both morality and certainty are presented as exogenous. . . .

(d) Although [the offense-level analysis is] based on four independent variables for only nine cases . . . , *he does not hesitate* to draw substantive conclusions [emphasis mine]. . . .

(e) He is oblivious to a glaring case of multicollinearity. (p. 276)

Grasmick and McLaughlin fail to recognize that the central point and purpose in using path analysis is to represent theoretically grounded causal models. As Duncan, (1966:16) pointed out in his definitive article on the subject, such an analysis is "meaningless" unless it reflects "explicit assumptions" derived from the "theoretical structure" of the problem. Path analysis is "invaluable in rendering interpretations explicit, self-consistent, and *susceptible to rejection by subsequent research*" (Duncan, 1966:1; emphasis mine). This is not only true in path analysis, but in multiple regression in general (Gordon, 1968), of which path analysis is a special case. Gordon (1968:592) points out that "multicollinearity" is essentially a problem of "substantive interpretation," an issue that is usually ignored in "statistics texts." When the correlation between independent variables is very high, the interpretation of the model "depends upon the causal ordering of the variables" (Gordon, 1968:594; for a discussion of the problems associated with multicollinearity in causal models in general, see Blalock, 1963). Consequently, a limited number of causal models may fit the available data. The choice of the best-fitting model must be based on both mathematical and theoretical grounds.

In my article, I reject a "chain model" principally on theoretical grounds (Silberman, 1976:449; see [a] above). Such a model would include the assumption of dependency among the four "independent" variables, each of which would become a dependent variable in a series of regression equations comprising the complete path model. This assumption is explicitly rejected. Furthermore, the inclusion of a fifth variable, criminal involvement, as a dependent variable in the model makes it clear on empirical grounds that a "causal chain" does not describe the data well at all. Consequently, the path model reduces to a "single-equation model in which all four variables are treated as exogenous" (p. 276).

As I point out in my article, the path model described in Figure 1 (Silberman, 1976:450) "is a pictorial representation of the linear, *additive*,

causal relations described in the preceding paragraphs" (Silberman, 1976:449; see [b] above). I add (Silberman, 1976:449), "Testing for interaction is essential to the discovery of the contingencies associated with the propositions of an axiomatic theory (Costner and Leik, 1964)." The analysis of variance described above was designed to test for this interaction.

On the offense level of analysis, all "independent" variables are no longer treated as exogenous, because such a treatment would not be consistent with the data: peer involvement is uncorrelated with any of the other variables and the zero-order intercorrelations among the remaining three independent variables are very strong. In the model treating the remaining three variables as exogenous, the deterrent effects of severity and certainty disappear. Consequently, a model assuming that at least one of the variables is not exogenous is consistent with the data, and a model in which moral commitment is the intervening variable fits the data best (see Silberman, 1976:451; and [c] above). The reader is cautioned at least twice on the "tentative" nature of conclusions based on the small number (nine) of offenses involved in the offense-level analysis (see Silberman, 1976:451, 453; and [d] above).

When the correlations among the independent variables are very strong, as they are on the offense level of analysis, the standard errors of the path coefficients become large, making it difficult to select causal models on strictly empirical grounds (Blalock, 1963:233-7; Gordon, 1968:568; Wonnacott and Wonnacott, 1970:59-62). This is called "the problem of multicollinearity" (Wonnacott and Wonnacott, 1970:61). From a strictly mathematical point of view, the independent variables in such a case are "causally equivalent" (Gordon, 1968:594); i.e., given sampling variation, each variable could substitute for the other equally well in the model. However, the variables in the model are not theoretically equivalent; i.e., they are conceptually distinct and theoretically independent ideas. It might be argued that respondents to a questionnaire may have similar understandings of the independent variables such that the underlying dimension is the same, but this is clearly not the case here. On the individual level of analysis, these variables are *not* highly intercorrelated. Only when *aggregated* are the correlations strong. In other words, the evidence supports the notion that the independent variables are conceptually distinct; i.e., not equivalent. The multicollinearity problem implies that different causal models may fit the data equally well, given sampling variation caused by large standard errors. While this is true mathematically speaking, theoretical considerations may

rule out certain models and favor others. The model presented in my paper not only fits the data best *for this sample*, but it makes the most sense theoretically (see pp. 453–60; and [e] above).

Since the publication of my article, Erickson et al. (1977) discussed the multicollinearity issue at length in their article on the relationship between perceived certainty of punishment and self-reported criminality for 15 types of offenses among high school students in Arizona. The data they presented differ in one important respect from mine: the coefficients they report are relatively weak, whereas the path coefficient between moral commitment and criminal involvement in my study is strong ($-.90$). As a noted econometrician points out,

The effect of an explanatory variable may be sufficiently strong for the estimated coefficient to be statistically different from zero in spite of the effect of collinearity in increasing the standard error (Johnston, 1972:163).

Furthermore, the standard error of the path coefficients *decreases* as the amount of unexplained (residual) variance decreases (see Johnston, 1972:161). Unfortunately, it also *increases* with decreasing sample size and increasing number of variables, a problem already noted above and in the original article (see Johnston, 1972:161–2). Despite the problem of multicollinearity, the strong negative path coefficient between moral commitment and criminal involvement, and the *relatively* small residual, lend further support for the model. The problem of sample size is inherent in an analysis based on the offense as its unit of analysis. There are a limited number of offenses that can be studied in the context of self-reported surveys, and there is a limited amount of information on different types of offenses from official sources. Despite these inherent problems, and with the appropriate notes of caution, we should continue to use the analytic tools that are available to us as best we can.

CONCLUSION

By quoting out of context, misunderstanding and misinterpreting the findings reported in my article, Grasmick and McLaughlin are able to derive a model of social control that is not supported by my article nor substantiated by their comments on it. Their model has four basic flaws:

(1) it reflects a misunderstanding of the analytic nature of the variables measured; e.g., the dependent variable in the model is simply conformity/deviance rather than degree of

criminality measured in terms of the number of offenses committed;

(2) it reflects confusion about the nature of interaction effects;

(3) it includes the notion of “threat of social disapproval” by conventional others, which was unmeasured in my study (although they claim that it was); and,

(4) it ignores the level of analysis issue.

These flaws and their theoretical implications are addressed in sequence below.

(1) Unlike Grasmick and McLaughlin, I do not stress the notion of “internalization,” nor a simple dichotomy of conformity/nonconformity in my analysis. Theirs is a model based on the assumption that individuals engage in deviant behavior because they are “inadequately socialized”; mine is not. According to Grasmick and McLaughlin, there are “good guys,” those that “conform because they have internalized the law [whose] conformity is independent of threats of legal punishment or social disapproval” (p. 277), and “bad guys,” who can only be deterred by the threat of force or disapproval from peers; i.e., they have no conscience. In citing Mead’s notion of “taking the role of the generalized other,” I stress the importance of the individuals’ response to “the society around him. . . . A sense of moral commitment should theoretically be organized around a *set* of societal regulations” (Silberman, 1976:456). What is “internalized” is the approving/disapproving responses of others who support (regulate) conventional behavior (the rules of the game). Expressions of moral commitment reflect the influence of “conventional” others. Furthermore, individuals are conceived of here to vary along a dimension reflecting the *degree* of commitment to “conventionality.” Dichotomizing above and below the mean, as I do at one point, does not imply that all those above the mean have “internalized the law.” Similarly, individuals are not conceived of as either conforming or nonconforming, but varying along a dimension of criminality from very little to a great deal. Nearly all (97%) of the respondents admitted to *some* criminality.¹ The issue is one of degree of conventionality (morality) and criminality (legality) and the relationship between these variables.

(2) The relationship between statistical interaction and substantive theory is not nearly

¹ As many as 78% admitted to committing at least one jailable offense from a list including disorderly conduct, drug use (excluding the illegal consumption of alcohol), theft, vandalism, and assault; 18% more admitted only to the illegal (under age) consumption of alcohol, a crime which only occasionally produces arrests.

as simple as Grasmick and McLaughlin suggest (see Southwood, 1978). There are a variety of theoretical interpretations possible for any given finding of statistical interaction. The appropriate theoretical interpretation depends largely on the method of analysis employed. The theoretical model Grasmick and McLaughlin employ is what Southwood (1978:1163-9) calls a "conduciveness" model in which the existence of the effect of an independent variable depends on the presence (or absence) of some specific condition associated with a third variable. The kinds of theoretical assumptions Grasmick and McLaughlin make regarding the nature of law and morality, i.e., that there are conformers and nonconformers, those who are moral and those who are not, those who violate the law and those who do not, are not consistent with the methodological approach used in the original analysis nor in their reanalysis of the data. Consequently, the model of social control they posit based on these assumptions is not consistent with the actual results. The evidence is consistent with an interaction model in which "the linear relationship of a dependent variable, Y, with an independent variable, X, is itself a linear function of [a third variable]" (Southwood, 1978:1163).

(3) A measure of moral commitment is a better indicator of the "threat of social disapproval" from conventional others than a measure of involvement with deviant others. Such an interpretation yields a model in which the negative (deterrent) effect on criminal involvement of certainty of punishment increases with decreasing conventionality (moral commitment); i.e., the effects of certainty and threat of social disapproval on criminality are interactive rather than "additive" as Grasmick and McLaughlin assert.

(4) In describing the analysis of the offense-level data as invalid, and ignoring that part of the analysis which examined interaction among the variables, Grasmick and McLaughlin conveniently neglect a central criticism of the deterrence literature that I was addressing in such an analysis. The literature is replete with examples of the "ecological fallacy," the inference to one level of analysis from data based on another. I believe that I demonstrated successfully that no matter what model might best describe the interrelationships among the variables on the offense level of analysis, it would not be the same as one describing these interrelationships on the individual level. In the case of offenses for which there is strong moral commitment in general (e.g., assault), the correlation between perceived certainty of punishment and criminal involvement is significant and negative,

whereas in the case of offenses for which there is little moral commitment in general (e.g., drinking under age), the correlation between perceived certainty and criminal involvement is not significant. Similarly, in the case of offenses for which there is strong moral commitment in general, the correlation between peer involvement and criminal involvement is significant and positive, whereas in the case of offenses for which there is little moral commitment, this correlation is not significant.

In general, the strength of the effects of the independent variables (excluding perceived severity) *increases* with increasing levels of moral commitment among offenses, whereas the strength of the effects of the independent variables *decreases* with increasing moral commitment among individuals. This suggests that individuals who are *less* morally committed in situations where supports for conventionality are generally strong are most deterred by the perceived threat of certain punishment and most encouraged by support for criminality by deviant others. In situations where there is little *general* support for regulation, the threat of punishment and the support of deviant others has *relatively* little effect on involvement in acts that are legally, but not morally, proscribed.

These data are consistent with a theory of differential association, differential opportunity structures, and differential law enforcement discussed more fully in the concluding section of my article (Silberman, 1976:458-60).

Matthew Silberman
Bucknell University

REFERENCES

- Adamek, Raymond J. and Edward L. Dager
1968 "Social structure, identification and change in a treatment-oriented institution." *American Sociological Review* 33:931-44.
- Bailey, William C., and Ronald W. Smith
1972 "Punishment: its severity and certainty." *Journal of Criminal Law, Criminology and Police Science* 63:530-9.
- Blalock, Hubert M., Jr.
1963 "Correlated independent variables: the problem of multicollinearity." *Social Forces* 42:233-7.
- California Assembly Committee on Criminal Procedure
1968 *Deterrent Effects of Criminal Sanctions*. Sacramento: Assembly of California.
- Costner, Herbert L. and Robert K. Leik
1964 "Deductions from 'axiomatic theory.'" *American Sociological Review* 29:819-35.
- Duncan, Otis Dudley
1966 "Path analysis: sociological examples." *American Journal of Sociology* 72:1-16.

- Erickson, Maynard L., Jack P. Gibbs and Gary F. Jensen
1977 "The deterrence doctrine and the perceived certainty of legal punishments." *American Sociological Review* 42:305-17.
- Etzioni, Amitai
1961 *A Comparative Analysis of Complex Organizations*. New York: Free Press.
- Gordon, Robert A.
1968 "Issues in multiple regression." *American Journal of Sociology* 73:592-616.
- Grasmick, Harold G. and Steven D. McLaughlin
1978 "Deterrence and social control: comment on Silberman (ASR June, 1976)." *American Sociological Review* 43:272-8.
- Johnston, J.
1972 *Econometric Methods*. New York: McGraw-Hill.
- Julian, Joseph
1966 "Compliance patterns and communication blocks in complex organizations." *American Sociological Review* 31:382-9.
- Logan, Charles H.
1972 "General deterrent effects of imprisonment." *Social Forces* 51:64-73.
- Phillips, Bernard S.
1971 *Social Research: Strategy and Tactics*. New York: Macmillan.
- Ross, H. Laurence
1976 "The neutralization of severe penalties." *Law and Society Review* 10:403-13.
- Ross, H. Laurence, Donald T. Campbell and Gene V. Glass
1970 "Determining the social effects of a legal reform." *American Behavioral Scientist* 13:493-509.
- Silberman, Matthew
1976 "Toward a theory of criminal deterrence." *American Sociological Review* 41:442-61.
- Snyder, David and Charles Tilly
1972 "Hardship and collective violence in France, 1830 to 1960." *American Sociological Review* 37:520-32.
- Southwood, Kenneth E.
1978 "Substantive theory and statistical interaction: five models." *American Journal of Sociology* 83:1154-203.
- Teevan, James J., Jr.
1976 "Deterrent effects of punishment: subjective measures continued." *Canadian Journal of Criminology and Corrections* 18:152-60.
- Tittle, Charles R.
1969 "Crime rates and legal sanctions." *Social Problems* 16:409-23.
- Tittle, Charles R. and Charles H. Logan
1973 "Sanctions and deviance: evidence and remaining questions." *Law and Society Review* 7:371-92.
- Tittle, Charles R. and Alan R. Rowe
1974 "Certainty of arrest and crime rates: a further test of the deterrent hypothesis." *Social Forces* 52:455-62.
- Waldo, Gordon P. and Theodore G. Chiricos
1972 "Perceived penal sanction and self-reported criminality: a neglected approach to deterrence research." *Social Problems* 19:522-40.
- Warren, Donald I.
1968 "Power, visibility, and conformity in formal organizations." *American Sociological Review* 33:951-70.
- Wonnacott, Ronald J. and Thomas H. Wonnacott
1970 *Econometrics*. New York: Wiley.

ITEMS (Continued)

the University of Chicago. He is applying network analysis to the study of community decision-making. He also is studying the social structure of the legal profession in a major urban bar. In 1976 he authored (with Franz U. Pappi) *Networks of Collective Action* (Academic Press). He soon will publish *The Social Structure of the Legal Profession* (authored with John P. Heinz; forthcoming, American Bar Association). PETER V. MARSDEN is Assistant Professor of Sociology at the University of North Carolina. His research centers on a development of modifications of Coleman's purposive action model to allow for constraints imposed by social networks.

■ GARY ALAN FINE (Small Groups and Culture Creation) is Assistant Professor of Sociology at the University of Minnesota. Fine's current research is on the relationship between social structure and artistic production. In particular, he is examining the position of chefs as artists, and of gourmet cooking as artistic work.

■ JOE L. SPAETH (Vertical Differentiation among Occupations) is Associate Professor in the Department of Sociology and Research Associate Professor in the Survey Research Laboratory at the University of Illinois, Urbana. He is completing research on the determinants of earnings and of the sex gap in earnings and on-job satisfaction among college graduates. He also intends to pursue his interests in occupational stratification.

■ JOHN SEIDLER (Priest Resignations in a Lazy Monopoly) is Associate Professor of Sociology at Ohio State University. His research addresses conflict and structural change among American Catholic priests, from the 1960s through the 1970s.

■ SANDRA L. HOFFERTH (Early Childbearing and Later Economic Well-Being) is Research Associate at the Urban Institute, Washington, D.C. Her research centers on sex differences among non-college-bound boys and girls during the high-school and early post-high-school years. KRISTIN A. MOORE is Senior Research Associate at the Urban Institute, Washington, D.C. She is studying policy determinants of teenage childbearing. Both Hofferth and Moore have authored (with Steven B. Caldwell and Linda J. Waite) *Teenage Motherhood: Social and Economic Consequences* (Urban Institute, 1979).

■ J. SCOTT LONG (Entrance into the Academic Career) is Assistant Professor in the Department of Sociology at Washington State University. Long's current research presently proceeds on two paths: 1) the process of stratification in the scientific career; and 2) multivariate statistical techniques. PAUL D. ALLISON is Assistant Professor in the Department of Sociology at Cornell University. With J. Scott Long he is investigating the relationship between university departmental prestige and the productivity of individual scientists. He also is developing new methods for the analysis of event history data. ROBERT MCGINNIS is Director of the Re-

search Program on Social Analyses of Science Systems at Cornell. He is doing research on networks of basic and applied research, researchers, and research organizations in agricultural science.

■ ARLAND THORNTON (Changes in Sex Role Attitudes of Women, 1962-1977) is Assistant Research Scientist, Institute for Social Research, and Assistant Professor of Sociology at the University of Michigan. He is conducting research on sex roles, fertility, female labor force participation, and marital dissolution. DEBORAH S. FREEDMAN is Assistant Professor in the Department of Economics and Research Associate in the Population Studies Center at the University of Michigan. She is studying the interrelation of fertility and economic factors.

■ DAVID F. GREENBERG (A Panel Model of Crime Rates and Arrest Rates) is Associate Professor in the Department of Sociology at New York University. His work focuses on historical change in conceptions of deviance, law, and economic development in the Third World, and on the social psychology of delinquency. He has authored *Mathematical Sociology* (Rutgers University Press, 1979) and *Corrections and Punishment* (Sage, 1977). He plans to publish *Class and Crime: Essays in Marxian Criminology* (Mayfield, forthcoming). RONALD C. KESSLER is Assistant Professor in the Department of Sociology, University of Michigan. His research centers on the structural determinants of psychological well-being and mental illness, and on the role of coping resources in buffering the psychological effects of stressful life experience. CHARLES H. LOGAN is Associate Professor of Sociology at the University of Connecticut. His research interests include deterrence, parole, status offenders, and artifacts in ratio correlation. He has authored *Does Parole Make a Difference?* (with Howard R. Sacks; University of Connecticut Law School Press, 1979).

■ ROBERT M. O'BRIEN (The Use of Pearson's r with Ordinal Data) is Associate Professor and Chairperson of the Department of Sociology at California State College. His research focuses on statistical methodology, the ecological correlates of crime and the determinants of naturalization rates. He will publish (with David L. Decker and David Shicor) *Urban Structure and Victimization* (D. C. Heath, forthcoming).

■ WALTER I. WARDWELL (Comment on Franke and Kaul, ASR October, 1978) is Professor of Sociology at the University of Connecticut. His research centers on the sociology of health-related professions.

■ GUILLERMINA JASSO (Comment on Allison, ASR December, 1978) is Special Assistant to the Commissioner of the U.S. Immigration and Naturalization Service. Her work and interest concentrate on resource distributions and their impact on both social relations and the individual's sense of justice.

AMERICAN SOCIOLOGICAL REVIEW

THE PRESIDENTIAL ADDRESS: MEASUREMENT AND CONCEPTUALIZATION PROBLEMS: THE MAJOR OBSTACLE TO INTEGRATING THEORY AND RESEARCH*

H. M. BLALOCK, JR.
University of Washington

American Sociological Review 1979, Vol. 44 (December):881-894

In one sense the theme of this paper is obvious. Sociologists face extremely tough intellectual and practical tasks owing to the ambitious nature of our common objectives and the complex reality with which we deal. These tasks will require a *concerted* effort of scholars with diverse substantive, theoretical, and methodological interests and persuasions. Yet in many respects we seem badly divided into a myriad of theoretical and methodological schools that tend to oversimplify each other's positions, that fail to make careful conceptual distinctions, and that encourage partisan attacks.

Rather than dwelling on these divisive issues within our profession, it is crucial that we learn to resist overplaying our differences at the expense of common intellectual interests. There will obviously be disagreements over appropriate strategies, as well as ideological and disciplinary differences. But an idealization of conflict and dissensus is self-defeating. Some conflicts will inevitably occur and, if constructively resolved, may result in benefits to the discipline. But I think there has been too great a tendency to exaggerate these benefits, without recognizing the inherent dangers of endless theoretical and methodological debates and a further fractionating of our field.

One particularly disappointing feature of our discipline is that we have not had

the productive interplay between theory and research called for so eloquently by Merton (1968) several decades ago. This interplay, if it ever comes about in a systematic way, will require us to grapple with a number of extremely complex problems that I shall merely list before narrowing my remarks to two issues that illustrate the need for analyses that are simultaneously theoretical and methodological. My list is as follows:

1. Reality is sufficiently complex that we will need theories that contain upwards of fifty variables if we wish to disentangle the effects of numerous exogenous and endogenous variables on the diversity of dependent variables that interest us.

2. Many social changes are either very rapid compared to the intervals of observation or are continuous rather than discrete, so that temporal sequences cannot easily be inferred or linked to given historical events.

3. Realistic models of naturally occurring social phenomena must be nonrecursive or contain highly specific assumptions about lag periods or distributed lags.

4. Many important theoretical variables are highly intercorrelated, though perhaps the empirical associations among them will be underestimated due to random measurement errors. Resolving this multicollinearity problem will require a combination of large samples and good measurement.

5. Human actors and social systems tend to be nonhomogeneous with respect

*Address all communications to: Hubert M. Blalock; Department of Sociology; University of Washington; Seattle, WA 98100.

to parameters in structural equations, implying that they will not respond similarly to changes in other variables. This will have major implications not only for our theories but also for measurement decisions, whenever effect indicators are being used, and for micro-macro analyses where aggregation decisions are needed.

6. Many groups and contexts have fuzzy boundaries. Standards, such as group norms or role expectations, also tend to be imprecise and subject to dispute. Measurement that depends in some essential way upon these fuzzy boundaries or standards thereby becomes exceedingly difficult.

7. The linkage of micro- and macrotheories involving different units of analysis is problematic unless simplifying assumptions can legitimately be made. In particular, aggregation-disaggregation problems are made difficult whenever there are nonnegligible contextual effects, nonlinearities, or unknown measurement errors.

8. All measurement is to some degree indirect and therefore requires untested assumptions of a causal nature, but this problem is especially serious whenever one-to-one linkages between constructs and indicators cannot be assumed, whenever replications under standardized conditions are impossible, whenever homogeneity properties facilitating indirect measurement cannot be assumed, and whenever the ratio of unmeasured to measured variables is high.

9. Given the practical roadblocks to data collection that will continue for the foreseeable future, any piece of research will necessarily involve large amounts of missing information, thereby requiring either implicit or explicit assumptions and the neglect of numerous variables thought to be theoretically important.

Although the development of theory is important in its own right, I believe that the most serious and important problems that require our immediate and concerted attention are those of conceptualization and measurement, which have far too long been neglected. I have reached this conclusion having come at the matter from two very different perspectives. The first is through an examination of the implica-

tions of random and nonrandom measurement errors for data analysis and theory testing, and the second is through frustrating efforts to make sense of the theoretical and empirical literature in one of our substantive fields, that of race and ethnic relations. Both these endeavors leave me with the realization that these conceptualization and measurement problems are much more complex than I had previously thought. In fact they are so complex, and their implications for analysis so serious, that I believe that a really coordinated effort in this direction is absolutely essential.

Clearly, we need theories that are sufficiently general to integrate our fragmenting discipline into reasonably coherent bundles. These theories must be precise enough to yield predictions that are both falsifiable and that extend beyond common sense. We might hope that our theories and analyses can also be reasonably simple, but for reasons elaborated elsewhere (Blalock, 1979) I do not believe we can simultaneously achieve generality, accuracy, and simplicity. Therefore we must give up one or another of these desirable characteristics. If we opt for simplicity, and if social reality is in fact complex, we shall inevitably be misled.

Given the limitations imposed by our meager resources and missing data, it is crucial that we carefully examine what these imply in terms of linkages between theory and research. Missing variables force us to use highly indirect measures, improper aggregation operations, and crude background factors as indicators of experience variables. For practical reasons, many of these missing variables must remain unmeasured. Thus we must substitute a series of implicit or explicit assumptions about how these variables operate. But assumptions can either be made blindly for convenience or after one has carefully tried to identify the missing variables and think through their implications for the theory in question. The latter course is much more frustrating and disillusioning, but it is the surest way to make genuine progress in pinpointing inadequacies in existing theories and data.

In the sections that follow I shall discuss two very different though serious

problems that illustrate the complexity of the type of analysis that I believe is needed in the face of such missing information. These problems are: (1) the plethora of theoretical definitions of generic behaviors and their implications for measurement, and (2) the confounding of measured and unmeasured variables when individuals are aggregated in macrolevel analyses.

Both types of problems illustrate an important kind of temptation, namely that of substituting relatively simple operational indicators for theoretical constructs without paying careful attention to the underlying measurement model and required simplifying assumptions. In the case of behaviors, we note a tendency to define variables theoretically so as to facilitate generalizability at the expense of realism with respect to simplifying assumptions. In the case of aggregation by spatial criteria we encounter the need to specify unmeasured variables and mechanisms linking location in physical space to whatever dependent variable is being investigated.

The researcher, constrained by serious data limitations, usually finds it convenient to sidestep these issues. The theorist, trying to make sense of diverse empirical studies, is then confronted with an almost hopeless task and may be tempted to use the empirical information either selectively or anecdotally—or even to ignore it altogether.

THE MEASUREMENT AND CONCEPTUALIZATION OF BEHAVIORS

We have recently made considerable progress with respect to data *analysis* but relatively little with respect to data *collection*, and in particular our ability to observe, categorize, and measure behaviors. Even if one does not accept this assertion, I assume there is consensus on the need to improve our measurement of behaviors. There inevitably will be numerous practical obstacles to observing behaviors as they actually occur, but the problems I shall discuss are conceptual or theoretical and would occur even under the most ideal circumstances.

Human behaviors are extremely di-

verse, so much so that if we were to try to explain each one separately the situation would become hopeless. One way to resolve this problem would be to limit ourselves to a very restricted number of behaviors, but this is obviously not the course we are following. In a few instances behaviors pose no special measurement problems aside from observability. For the most part, these revolve around simple biological or economic needs. Certain other task-related activities are also rather directly linked to these basic needs, so that even though they may vary from culture to culture, they are easily classified.

Many behaviors of greatest interest to sociologists, however, are not of this nature and tend to be confounded in the real world. This is particularly true for behaviors that require a social partner or that are conditional on properties of a social system. We recognize that there are many different "forms" of these behaviors, which are often very different in terms of manifest or directly observable characteristics. Thus one may achieve status in a variety of ways, such as killing enemies, saving lives on the operating table, tackling opponents on a football field, or making vague political promises.

How do we get a theoretical handle on these diverse behaviors so as to group them into a much smaller number of conceptual ones? Although there are undoubtedly more, I am aware of four strategies, all of which rely on theoretical assumptions that usually remain implicit: (1) a linkage is assumed between the behavior and some motivational state, which usually appears in the theoretical definition; (2) there is an assumed causal linkage between the behavior and some consequence, which is an integral part of the definition; (3) the behavior is defined in terms of some general social standard with which it is compared; and (4) there is an assumed linkage between the behavior and other variables that cause this behavior to be repeated, with replication being an essential component of the definition.

Each of these definitional strategies thus requires simplifying assumptions that will be more or less realistic, depending

upon the complexity of the setting, the motivations of the actors, and the reactions of other actors who may also affect outcomes or ways in which behaviors are repeated. We should therefore not be surprised to find each definitional strategy being accompanied by certain theoretical biases that help the social scientist justify whatever simplifying assumptions are most convenient for that strategy. The more complex the behavior, the more crucial it is to uncover such biases and to state assumptions explicitly.

1. Behaviors Defined in Terms of Internal States

The lack of a perfect correspondence between attitudes and behaviors has been well documented. But it may not be so obvious that many general types of behaviors are *defined* in such a way that some internal state becomes an essential ingredient in the definition, so that measurement requires assumptions about these internal states. For instance, "aggression" may be defined as behavior intended to injure another party or "altruistic behavior" as any form of behavior intended to benefit someone other than the actor, without regard to the consequences for that actor. "Avoidance" may be defined as any behavior the purpose of which is to reduce contact with another actor, and "exploitation" may be conceived as the use of another actor for one's own ends.

What simplifications seem necessary in using this definitional strategy? Let us illustrate with the aggression example. If there were a closed set of behaviors that could be listed, each of which is clearly linked to the injury of another party, one could supply the observer with the names of these familiar behaviors. Two kinds of difficulties are encountered, however. First and most important, many behaviors serve several ends at once. In fact human beings are remarkably adept at creating situations in which actors can kill several birds with one stone. Aggression may be instrumental in weakening the competitive position of an opponent or in attaining status among one's peers. This means that the same behaviors can be classified in

different ways if the theoretical definition is stated in terms of a postulated internal state. Thus several different types of behaviors may be hopelessly confounded. One theorist may refer to aggression, a second to exploitation, and a third to competitive behavior, all "observed" in the same way.

The second obvious problem is that the relationships between the internal state and the behavior may be more or less direct, may involve differing time delays, and may be subject to distortion by either the actor or the observer, whose theories of social causation may differ. Some forms of aggression are very overt, immediate, and nonsubtle. Others are very delayed, so much so that the observer may not be around at the time they are enacted. Still others may be subtle and disguised as behaviors of a different type. In yet other instances, the actor may intend to injure another party but may fail because he or she does not adequately understand the motivation of that party. The observer, too, may misread the intent of the first actor.

Given these difficulties, what kinds of simplifications are we tempted to make? First, we may confine ourselves to simple laboratory settings in which actors' choices are restricted to a small number of alternatives, each of which is assumed simply linked to a postulated internal state. Aggression, altruism, or avoidance thereby may be identified with relatively simple operations such as that of pushing a blue rather than a red button. The measurement-conceptualization problem is then transformed into one of assessing "external validity" or generalizability.

A second simplifying strategy uses a restricted subset of behaviors most simply linked to the internal state referred to in the conceptual definition. If some forms of aggression are subtle, indirect, or delayed, these are excluded from the operational definition because they are difficult to interpret. The result is a nonrandom selection of behaviors biasing the findings in unknown ways. If educated persons are more likely to use subtle forms of aggression than less educated ones, then aggression among the former group will be underestimated.

A third strategy is closely linked with the second. One may limit oneself to a small number of "master motives" that underlie nearly all human behaviors, so that whenever a behavioral form can be located that supports one's theory, this master motive is invoked in labeling the behavior to confirm this theory. Thus if one believes that an intent to injure others is present in almost all human interactions, then nearly every form of behavior can be considered as a subtle form of aggression. Similarly, it is possible to infer an exploitative motive behind almost every behavior. Those who see status-seeking as a prime motivator may define whatever behaviors they see as instances of status-seeking, and to some degree they will probably be correct. Since most behaviors in complex settings involve mixtures of motivations, there is a wide-open opportunity to label any given behavior as an instance of many different kinds of generic behaviors defined theoretically in this fashion.

A fourth way to simplify the classification of behaviors is to accept the actor's word for his or her own motivation. Rarely are we so naive as to believe a respondent who claims a pure motive, but in effect this may be what actually occurs whenever we ask a respondent or witness to recall what has taken place. To do so, one must rely on popular vocabulary and common definitions, rather than scientific usage. This may result, to an unknown degree, in a generalization process involving the substitution of inferred generic terms for "directly observed" behaviors (such as a blow or spatial movement). The social scientist wishing to give precision to behavioral concepts that have popular meanings is thus faced with a dilemma. Either one must rely on popular definitions when events are being reported, or one must develop a more precise terminology that does not correspond to this popular usage. Whenever one wishes to generalize across cultures or languages, these problems become even more serious.

A fifth temptation is to use clues based on past behaviors to infer motivation. For instance, if an employer has not recently hired a sufficient number of blacks and

then claims that current efforts are sincere, though unsuccessful, it may be inferred that this employer is discriminating against blacks (defined in terms of differential treatment *because of* race) if the ratio of black to white hirings does not reach some predetermined level. It may be, of course, that the past record also was a resultant of forces beyond the employer's control. The point is that intent is inferred on the basis of past practice or results, but without an explicit theory allowing for alternative explanations.

Whenever one wants a measure of the intensity of a behavior, we may add a sixth temptation to the list. This is to use an objective measure of the behavioral intensity or duration, without partitioning this among the several underlying motivations. For instance, suppose the intent to injure another person is only a very minor component of the actor's motivation. Perhaps self-defense or a desire to reduce competition is the major goal. Degree of aggression may be measured solely in terms of the behavioral act, thus bypassing the problem of measuring motivational strength (or utility) independently of the behavior itself. This may then affect one's theoretical interpretations. Suppose, for example, that the decimation of American Indians by white settlers was primarily based on the utilitarian goals of securing more land or protecting one's family. It would then be misleading to build an explanatory model, representing these actions as extreme aggression. The major point is that the relative importance of different underlying motivations needs to be kept distinct from that of the frequencies and intensities of behaviors unless it can be assumed that behaviors and motivations can be linked in a simple one-to-one fashion.

2. Behaviors Defined in Terms of Consequences

One may sidestep the problem of identifying and measuring internal states by focusing entirely on the consequences of the behaviors. Our discussion of this alternative strategy can be more brief since the issues once more illustrate our main point that there are numerous theoretical

assumptions needed to carry out this kind of measurement strategy whenever the social situation is at all complex. First, *someone* must assess the consequences since a causal theory is being invoked to link the behaviors with some set of outcomes. But whose theory? The actor's? Other parties' in the situation? The supposedly neutral observer's? And which outcomes and using what time span? If there are both short-term and long-term consequences that are not identical, which should be used? And what if these outcomes are conditional on the behaviors of *other* actors in the social setting?

Once more, there will be pressures to simplify. One possibility is to confine oneself to very simple situations. Another is to dichotomize consequences as either occurring or not, thereby ignoring variations in degree. Still another is to ignore multiple consequences and look only at those consequences that are obvious and immediate in a temporal sense. Taking the example of aggression (now defined as behavior that results in injury), this would rule out many forms of delayed aggression or subtle types where the consequences seemed to be highly indirect. Again, this will result in biased measures to the degree that not all actors employ the same forms of aggression.

Whenever the consequences are conditional on the responses of other actors it will be especially tempting to simplify one's causal theory to obtain an unambiguous measure of the behavior. Suppose one defines discrimination as behavior that results in unequal consequences for classes of actors defined in certain ways, as for example by age, sex, or race. Suppose an employer makes a set of judgments that results in the hiring of disproportionately few blacks. Was the lack of hiring solely a consequence of the employer's action or also of the behaviors of the applicants for the position? It is tempting to try to get off the hook by crudely matching blacks and whites on "relevant" variables, as defined by the investigator, usually in accord with data availability considerations.

Furthermore, if the discriminatory behavior leads to some sort of response that jointly affects the outcome, then how does

one define or measure the behavior without taking this response into consideration? How does one measure teaching effectiveness or leadership quality? The most tempting resolution is to assume away the problem by taking the second actor's behavior either as being totally dependent on that of the first or as having negligible consequences in its own right. Thus we often assume that minorities, children, and other relatively powerless actors are totally powerless, so that their own responses can be ignored.

Basically, this measurement strategy may tempt one to ignore all sorts of intervening and conditioning variables by grossly oversimplifying the causal connection between the behavior in question and the consequences that are being identified. There will be a vested interest in simplifying this set of consequences, just as the prior strategy creates one in simplifying the actor's motivational structure.

3. *Behaviors Defined in Terms of Standards*

Certain kinds of behavior are defined theoretically in terms of some social standard, which is often either rather vague or differently defined by actors having contrasting interests. For example, deviance is defined in terms of departures from social norms, which may be subject to dispute. In the case of criminal behavior the norms may be clearly stated in the form of laws that are enforced by official sanctions, but the laws themselves may vary from one jurisdiction to the next. Similarly, the notion of exploitation in an exchange relationship may be defined in terms of some standard by which equity can be evaluated. There are also a number of popular terms such as "mentally disturbed," "addiction," or "antisocial" behavior that presumably imply some sort of implicit standard.

In all of these instances an investigator who attempts to measure the degree of departure from such standards is faced with a dilemma. If reality is fuzzy, how is it possible to obtain precise measures? We have, it seems, a kind of sociological Uncertainty Principle that places an upper limit on the accuracy of measurement of

such behaviors. How can one measure degree of conformity to imprecise norms? What if actors define a "fair" rate of exchange differently? Is there any meaning to a notion such as exploitation? The terms "conformity" and "exploitation" can be used in ideological writings, but can they become a legitimate part of a scientific vocabulary?

I believe it is possible to retain the essential features of the theoretical arguments that use such concepts, provided we make careful distinctions and somehow build the degree of fuzziness into these theories, as a separate variable. Whenever there is dissensus on group norms or on what constitutes a fair rate of exchange, this in itself becomes a datum of relevance to actors. Perhaps a measure such as a standard deviation can be used as a measure of such dissensus whenever the issue is unidimensional. When it is not, this in itself requires analysis because it will constitute an additional source of fuzziness for the actors concerned. Where the standards for a given subgroup are clear-cut but distinct from those of another, two separate variables can be delineated, as for example degrees of deviance from Group A norms and from Group B norms.

The temptation, here, is to substitute more precise standards for the true but fuzzy ones. One way to simplify the situation is to substitute some measure of average behavior for the norm, thereby giving it a definite meaning, although one that may differ from its meaning to the actors themselves. As is well known, there are two meanings to the word "normal," namely some measure of central tendency, on the one hand, and some idealized value, on the other. Insofar as these may differ according to the situation, our theories will then need to make the necessary distinction between the two types of standards.

Another alternative is to confine our operational measures to absolute values, using zero as the comparison point. Thus one may take suicide rates as a measure of deviance, but only if all suicides are socially defined as contrary to normative expectations. If certain suicides are not defined in this fashion, however, and if

normative standards vary across the units being compared, then clearly suicide rates will not be an appropriate indicator of deviance. Unfortunately, many of our theories of deviance are not very precise as to the standard about which deviance is to be measured or whether the norm is to be defined in terms of a measure of central tendency or some legal or ethical standard.

4. Behaviors Defined in Terms of Replications

The fourth strategy, that of relying on replications, seems most common among behavioral psychologists and social psychologists who rely heavily on experimental designs involving repeated measurements. Given very simple settings and assumptions about motivating factors, such a strategy indeed makes sense. In generalizing beyond the laboratory setting, one obviously cannot rely so heavily on operational definitions of behaviors that require such replications. For example, if one defines reinforcing behaviors as those that are followed by later instances of the behaviors they are supposed to reinforce, one must rule out other causes of the replicated behaviors. Perhaps the behaviors are repeated because they are constrained or influenced by factors unknown to the investigator.

The more general point is that whenever several variables jointly affect a behavior, a reliance on the replication operation to measure a behavior will lead to both theoretical ambiguities and also empirical irregularities that make measurement much more difficult. In short, the research operations cannot be generalized readily to more complex situations in which replications occur under much less controlled circumstances. In making comparisons across such situations, both the measurement operations and the situations themselves will vary, so that theory and measurement become hopelessly confounded.

Whenever manifestly similar behaviors are rarely repeated in real-life situations we are faced with another kind of dilemma, the resolution of which will require theoretical assumptions. The observation period, being arbitrary in most in-

stances, may in part determine the relative frequency of occurrences within a given population. If this proportion is very small, one will be confronted with a highly skewed response variable. This may be countered by defining the behavior in question as merely an instance of a larger class of behaviors that occur more frequently, but then problems of aggregation and homogeneity will arise. That is, the diverse behaviors that have been lumped together into the class may have different sets of causes or consequences.

Another alternative is to aggregate over individuals assumed to be similar in certain respects, so that one then works with behavior rates as estimates of probabilities of engaging in the behavior. Obviously this requires a well-defined theory as well as data sufficient to classify such individuals into categories that are homogeneous with respect to the parameters of the equations and not merely a set of "objective" attributes of individuals, such as age, sex, or SES. Often these aggregating decisions are made on the basis of convenience or convention, with the theoretical rationale being only implicit.

Finally, one may lengthen the time span so that behavioral acts of a given type will be more frequent. But this not only causes inconvenience for the observer but also is likely to introduce heterogeneity into the situation. The individual's motivation may have changed, the method of data collection or observational procedure may have to be modified, and situational factors may also be changing. The relative gains and costs of these alternative resolutions will of course have to be assessed for each particular case, and this will require a number of untested theoretical assumptions.

To conclude this section on behaviors, in considering the implications of each of these definitional strategies the essential point is not that assumptions can or should be avoided but that they need to be made explicit. Furthermore, we see that each measurement strategy requires the use of theoretical assumptions, only some of which can be tested. Our own experience (Blalock and Wilken, 1979) in attempting to analyze selected basic concepts in the field of intergroup relations is

that an apparently simple form of behavior, such as discrimination, aggression, or avoidance, requires for adequate conceptualization auxiliary measurement theories containing as many as twenty or thirty variables. I would be surprised if the same does not hold for other reasonably general social behaviors. It is no wonder, then, that our rate of progress in conceptualizing and measuring these behaviors has been slow and uneven.

THE CONFOUNDING OF VARIABLES IN AGGREGATING BY GEOGRAPHIC PROXIMITY

The literature on aggregation and disaggregation is both technical and discouraging in its implications, if one takes seriously the goal of integrating microlevel analyses, based on the individual as unit of analysis, with macrolevel studies where groups are the focus of concern.¹ Ideally, theories on the one level should be consistent, in some sense, with those on the other (Hannan, 1971:18-23). Furthermore, since some groups are nested within larger ones, and since in many instances group boundaries are fuzzy and therefore arbitrarily defined, it is also desirable to pass systematically from one aggregate level to another, as for example from counties to states.

In discussions of aggregation in the econometrics literature it is assumed that those who do the aggregating have a theoretical rationale for grouping individuals into behaviorally homogeneous aggregates. In most instances where sociologists use aggregated data, however, the grouping operation has already been done, usually with another purpose in mind. In these instances aggregation can hopelessly complicate one's analysis unless the criterion for aggregation can be fitted rather simply into one's theory. For instance whenever we are dealing with a corporate group as a unit of analysis it

¹ For three very different, though complementary perspectives on the aggregation problem, the reader is referred to the works of Firebaugh (1978; 1979); Hannan (1971) and Hannan and Burstein (1974); and Irwin and Lichtman (1976); and Langbein and Lichtman (1978). These sources also contain numerous additional references.

makes good sense to aggregate over individual members to obtain measures of group properties. Presumably, our interest will center on this group and other comparable groups as actors, as for example whenever business firms produce tangible products or state legislatures enact laws or allocate budgets.

In many other situations the picture is not this simple, however. Sometimes we may aggregate over a territorial unit that for certain purposes may be considered a corporate group (e.g., a state or county), but where the corporateness may not be an essential feature of the theory in question. For example, we may be studying crime rates in various counties, where county-level policies have virtually no impact upon these rates. Or we may have segregation indices based on block data that are available only for a central city, whereas the SMSA extends far beyond these arbitrary political boundaries. Or our theoretical interest may be on the microlevel, say, in understanding why individuals commit suicide or tend to avoid members of another group. Yet the data may be available only in aggregated form, as for example census tract data. In no sense can these territorial units be said to constitute true groups, nor is there any pretense that we are interested in highly coordinated behaviors.

In such instances we use the aggregated data because they are the only ones available. What can we say about the problems created when individuals are aggregated by spatial criteria? The answer depends upon the causal connections between the criteria used in grouping and the variables that appear in our theories (Blalock, 1964; Hannan, 1971).

The usual assumption is that the aggregation criterion, which we shall call A , is an independent variable in the model and that it is not operating to confound the effects of the independent variables under study. When we acknowledge the myriad ways in which spatial location may be linked to the variables of interest to sociologists we can anticipate the complications that such aggregation may produce. People are influenced not only by what goes on around them in the immediate present, but also in the past. They may

have moved from one community to another, carrying with them those effects in the former residence that we refer to as "background influences." Furthermore, not all individuals are affected in the same ways by the variables in their immediate environment. Some may have lived in the area all their lives. Others may have moved into the area because of its local traditions, whereas others may have entered and resisted them.

To come to grips with the problems that such complexities create, it will be helpful to examine several models that are themselves oversimplifications of the actual processes at work. We begin with a model in which it is presumed that the territorial units are closed to migration and that contextual effects operate entirely within the boundaries that have been operationally defined.

A Closed-System Example

Suppose we are willing to assume that our criterion for aggregation, here a spatial one, operates only as an independent variable. Of course we do not imagine that location, *per se*, affects the variables of interest. Instead, one's spatial position may be taken as a cause indicator of the unmeasured variables that are presumed to be the true causes of the variables in question. Take the model of Figure 1 as an illustration. Perhaps X_1 represents educational achievement, assumed to be a constant property of the individual once the process has been completed. Suppose X_2 represents a relatively constant type of personal value (say, egalitarianism) that has been developed over time as a result of socialization experiences linked closely

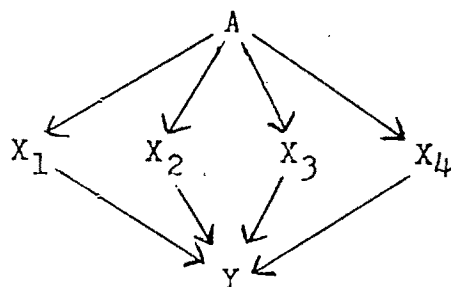


Figure 1.

with one's spatial location. Let X_3 represent another kind of attitudinal variable (say, one's attitude toward a specific minority) that is readily modifiable and therefore subject to changes in one's immediate environment. Finally, suppose X_4 represents a contextual variable (such as a set of sanctions) that operates in the immediate locale.

Now suppose that all these X_i affect a certain form of behavior Y . To simplify we shall assume that the effects are additive, so that the behavior Y may be represented by the equation

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \quad (1)$$

In the model of Figure 1 we have drawn causal arrows from A to each of the X_i representing the argument that one's location in space in part determines the levels of these X_i as intervening variables.

In any realistic situation an investigator will be unaware of or unable to measure many of the X_i that affect Y . Suppose, for example, that only X_1 and X_4 have been measured and used in an incorrectly specified equation for Y . The least-squares estimates b_1 and b_4 of the parameters β_1 and β_4 will then be biased to the degree that the omitted intervening variables are correlated with X_1 and X_4 . In the model of Figure 1 the intercorrelations among the X_i are due solely to A , implying that a control for A (if perfectly measured) would wipe out these interrelationships. Thus if we were to examine the data *within* a single territorial unit, we would find no association among the X_i , implying that even in the incorrectly specified equation

$$Y = a + b_1 X_1 + b_4 X_4 + e \quad (2)$$

the estimates b_1 and b_4 would be unbiased estimates of β_1 and β_4 .

Of course this is a highly oversimplified model in which there are no other arrows connecting the X_i , whereas in actuality we would expect intercorrelations within each area. But this prototype model is presumably illustrative of more complex ones and involves the kind of assumption needed to justify controlling for residential

area. The essential notion is that many causal factors are generally confounded together because of common residence. Therefore, a control for residence is expected to weaken these associations, if not do away with them altogether.

What is less obvious is that when we aggregate by location we do the very opposite of controlling for A . In grouping by A we put together people who are similar in their X_1 levels. But they will also be similar with respect to their X_2 , X_3 , and X_4 values. Suppose the X_i are labeled so that the relationships with A are all in the same direction, so that we may represent them by positive signs. Then persons who reside in a location where the X_i values tend to be high will also have high X_2 , X_3 , and X_4 values. If we shift our analysis to the macrolevel, using the estimating equation

$$\bar{Y} = a^* + b_1^* \bar{X}_1 + b_2^* \bar{X}_2 + b_3^* \bar{X}_3 + b_4^* \bar{X}_4 + e^* \quad (3)$$

where the \bar{X}_i represent mean values for the same X_i as represented in Figure 1, we may ask how the new least-squares estimates b_i^* may be expected to compare with estimates that would have been computed on the basis of individual-level data.

What happens in this case is that the \bar{X}_i will be more highly intercorrelated than the microlevel counterparts X_i . If we have specified the model perfectly and if there is absolutely no measurement error in any variable, this will not lead to any systematic biases in the macrolevel estimates of the parameters. But because of the increased intercorrelations we encounter a multicollinearity problem that tends to increase sampling errors.

It is more important, however, to consider the implications of this confounding of intervening variables in instances where there are specification errors. Suppose we do not know all the X_i that cause Y and that are intercorrelated because of location. To be specific, suppose we have included only \bar{X}_1 and \bar{X}_4 in the equation for \bar{Y} . Our biases in parameter estimates will now be much more serious than in the micromodel discussed earlier. In effect, if we shift to group means but ignore certain of the causes of \bar{Y} , the effects of these omitted variables are even more con-

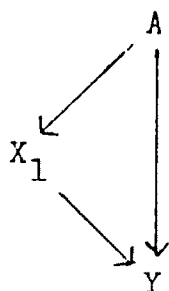


Figure 2.

founded with those of the intervening variables we have been able to include. Put another way, our aggregated model is more sensitive to at least these types of specification errors than is the micromodel, even where the location variable A has been ignored.²

For the model of Figure 1 we thus have three analysis possibilities. Our best option is to use microdata and to control for A . Our second best bet is to use microdata and to ignore A . In doing so, if we happen to leave out any of the intervening X 's we will confound their effects with the remaining X 's. The third option is to obtain between-area data by aggregating, in which case we increase the intercorrelations among the intervening variables, thereby confounding to an even greater degree the effects of the omitted X 's with the causal variables in which we are explicitly interested.

We cannot say that aggregation will always have this effect, but to the degree that reality approximates the model of Figure 1 this will hold. In the extreme case where we have measured only X_1 , the original model could be replaced by Figure 2 in which the arrow from A to Y has been drawn as direct. Here A is creating a partly spurious relationship between X_1 and Y , and should be controlled. But if we aggregate by A we are grouping by a cause of Y , and as I have shown elsewhere (Blalock, 1964) this produces a systematic bias in our slope estimate linking X_1 and Y ,

² Irwin and Lichtman (1976) stress that the essential criterion in deciding between a micro- and a macromodel is the relative degree of specification errors involved. Here, this criterion implies that the micromodel is to be preferred.

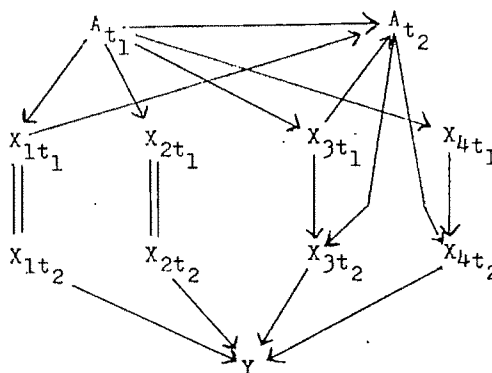


Figure 3.

a bias that may be interpreted as resulting from the confounding with X_1 of all other effects of A that are also causes of Y .³

An Open-System Example

Now consider the somewhat more complicated but also more realistic situation in which persons are immigrating into and emigrating from each of the areal units. Here we must take A as a dependent as well as an independent variable. Of course the area is not "dependent" upon its residents. What we mean is that since our microunits of analysis are individuals or families, the particular area in which they are located is dependent upon their decisions. To study this kind of situation we now must bring in the time dimension and try to distinguish between contemporary and past influences, as well as internal states that we are willing to assume are stable over time as contrasted with those that may change as a result of immediate stimuli.

Consider the model of Figure 3. Here we distinguish between an individual's location at time 1, namely A_{t1} , and his or her location at time 2. Migration may or may

³ Firebaugh (1978) discusses this kind of situation in terms of a general criterion for avoiding aggregation bias, namely that the association between Y and \bar{X} , controlling for \bar{X} , must be zero if bias is to be avoided. In other words, \bar{X} must not belong in the equation for Y , a criterion that will not be satisfied if \bar{X} is a surrogate for other variables that have been omitted from the equation because of specification errors.

not have occurred in the interim. Following Stinchcombe's (1968) discussion of historical explanations we may draw an arrow linking A_{t1} to A_{t2} . What one does today, or where one is, influences tomorrow's behavior or location, if only in the sense that once a given pattern of behavior has been learned there is a vested interest in not changing it unless there are specific pressures to do so. For those who have not migrated, A_{t1} and A_{t2} will be identical. The degree of association between these two variables will depend on the proportion of migrants and, although not indicated in the diagram, this proportion itself could be one of the contextual variables that affect behavior Y , perhaps through the sanction system represented by X_4 .

Suppose X_1 and X_2 represent variables that do not change over time. Therefore the change in location has not affected either of these variables. I have represented this by drawing in double lines without arrowheads to indicate that X_1 and X_2 remain identical at the two points in time. Suppose, however, that X_3 and X_4 may be affected by the new location as well as the old. Therefore I have drawn arrows to X_{3t2} from both X_{3t1} and A_{t2} (and similarly for X_{4t2}), making the assumption that the changes produced by the change in location are almost immediate. Finally, the behavior Y at time 2 is taken as dependent upon the contemporary values of the X_i , as was also true in Figure 1.

Now suppose both migrants and non-migrants are lumped together, as is often the case in microlevel analyses and as is practically always necessary for aggregated data. Again, if we have perfect measures of the contemporary values of all the X_i , we may estimate their separate effects without bias, though if they are too highly intercorrelated we shall have large sampling errors. But suppose there are specification errors, either in the form of poor measurement of some of the X_i or their omission from the equation. Previously we noted in Figure 1 that a control for A would remove all the intercorrelations among the X_i , so that if some were inadvertently omitted the estimates of the structural parameters for the others would

remain unbiased. This will not be true, however, for the more complex model of Figure 3 unless both A_{t1} and A_{t2} are simultaneously controlled. If we looked only within A_{t2} we would expect to find a correlation between X_1 and X_2 that would be some function of the proportion of immigrants, since these variables depend only on the factors operating during the earlier period. Presumably, X_1 's correlation with X_3 and X_4 would be somewhat weaker, owing to the contemporary factors affecting the latter two variables. The correlation between X_{3t2} and X_{4t2} , assuming we are dealing with within-area data, will depend on the relative importance of contemporary influences as compared with earlier ones.

What happens when we aggregate using only the present location A_{t2} ? Once again, we do the very opposite of controlling for location and thereby tend to confound the effects of the four X_i . But we now also are grouping by a variable that may be dependent upon certain of the X_i . In Figure 3 I have drawn arrows from X_{1t1} (say, education) and X_{3t1} (say, attitude toward a minority) to A_{t2} , presuming that these two X_i have influenced the decision to migrate. But if we aggregate by A (at time 2) we are manipulating a dependent variable in terms of the relationship between X_1 and X_3 , and this will distort their relationship in an unknown way.

The models with which we have been concerned are grossly oversimplified and merely illustrative of the problems one encounters when aggregation operations are poorly understood. In a sense, aggregation by spatial units is understood in that the criteria for aggregation are clearly operationalized. But what we generally lack is a theoretical model connecting spatial location with the other variables in the system. Thus we achieve operational simplicity at the expense of theoretical clarity. The result is that we are unable to link our macrolevel aggregated data with the microlevel causal processes that may have produced these data. Put another way, if we wanted to insert the aggregation criterion into the causal model we would find that the model would have to be highly complex because one's spatial

location is not simply related to the other variables in these models.

CONCLUDING REMARKS

These are but two among many possible illustrations of the need for careful conceptualization and attention to measurement problems and of the fact that theoretical and methodological issues are closely interconnected. They also suggest the importance of bringing implicit assumptions out into the open, even where the added variables in the model may have to remain unmeasured in any given piece of research. Unless this is done, many of these variables will remain confounded with measured variables. It will then be difficult to decide rationally as to the relative merits of alternative design strategies needed to unravel their interrelationships.

In particular, it is important to reemphasize how crucial it is to avoid the temptation to sidestep theoretical and conceptual issues by resorting to very simple operational procedures. I have illustrated this in terms of aggregation according to spatial criteria. A similar temptation also arises with time. Certain variables, such as education, experience, or investments, may be indirectly measured in terms of lapsed time, whereas the conceptual variables of real interest may be only very loosely defined theoretically. The literature on the age-period-cohort problem, for example, relies almost exclusively on calendar dates and lapsed time, as indicators of experience variables, as for example the assumed common experiences of persons born during a five-year period. Relatively sophisticated methodological techniques may be used to attempt to disentangle the separate effects of functionally interrelated variables, as operationally defined. But the true cohort or period effects remain only vaguely specified, as does the linkage between chronological age and maturation. Obviously, sophisticated data analysis techniques, alone, cannot resolve these and other problems unless the theoretical and measurement-error models are clearly specified (Glenn, 1976).

Initial efforts to specify models more completely and to theorize explicitly about linkages between measured and unmeasured variables are almost certain to have discouraging implications. We shall realize how many missing variables and hidden assumptions tend to be ignored in empirical data analyses, as well as theoretical interpretations of empirical results. This obviously carries with it the danger of inhibiting further work and encouraging a hypercritical appraisal of the sociological literature. I believe this is a risk we must take, however, if we are to create a really cumulative knowledge base.

This, in turn, leads me to one inescapable conclusion. Sociologists need to work *together* on these problems. We can ill afford to go off in our own directions, continuing to proliferate fields of specialization, changing our vocabulary whenever we see fit, or merely hoping that somehow or other the products of miscellaneous studies will add up. The plea, then, is for a sustained effort to clarify our theoretical constructs and self-consciously to ask ourselves how different strategies of conceptualization relate to problems of data collection and measurement.

There will still be plenty of room for differences in terms of the kinds of propositions we wish to state and test, the assumptions we are willing to make, the problems we study, the courses of action we recommend, and the theoretical and ideological biases with which we operate. In the proposed joint effort, there is a need for many different kinds of skills, interests, and knowledge bases to help solve technical issues, bring out implicit assumptions, and try to reach a working consensus on our conceptual apparatus and epistemic correlations.

If nothing else, such a concerted effort will better enable us to comprehend what each of us is trying to say and to appreciate more fully the complexity of the theories and analyses needed to understand a very complex reality. If we do not make this concerted effort, I fear that sociology in the year 2000 will be no more advanced than it is today, though perhaps



it will contain far more specializations, theoretical schools, methodological cults, and interest groups than, even today, we can readily imagine.

REFERENCES

- Blalock, H. M.
1964 *Causal Inferences in Nonexperimental Research*. Chapel Hill: North Carolina Press.
1979 "Dilemmas and strategies of theory construction." Pp. 119-35 in W. E. Snizek, E. R. Fuhrman, and M. K. Miller (eds.), *Contemporary Issues in Theory and Research*. Westport, Conn.: Greenwood.
- Blalock, H. M. and Paul H. Wilken
1979 *Intergroup Processes: A Micro-Macro Approach*. New York: Free Press.
- Firebaugh, Glenn
1978 "A rule for inferring individual-level relationships from aggregate data." *American Sociological Review* 43:557-72.
- 1979 "Assessing group effects: a comparison of two methods." *Sociological Methods and Research* 4:384-95.
- Glenn, Norval D.
1976 "Cohort analysts' futile quest: statistical attempts to separate age, period and cohort effects." *American Sociological Review* 41:900-4.
- Hannan, Michael T.
1971 *Aggregation and Disaggregation in Sociology*. Lexington: Heath-Lexington.
- Hannan, Michael T. and Leigh Burstein
1974 "Estimation from grouped observations." *American Sociological Review* 39:374-92.
- Irwin, Laura and Allan J. Lichtman
1976 "Across the great divide: inferring individual level behavior from aggregate data." *Political Methodology* 3:411-39.
- Langbein, Laura Irwin and Allan J. Lichtman
1978 *Ecological Inference*. Beverly Hills: Sage.
- Merton, Robert K.
1968 *Social Theory and Social Structure*. New York: Free Press.

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Robin M. Williams, Jr., Department of Sociology, Cornell University, Ithaca, New York 14853.

THE CONTRADICTION OF DOMINATION AND PRODUCTION IN BUREAUCRACY: THE CONTRIBUTION OF ORGANIZATIONAL EFFICIENCY TO THE DECLINE OF THE ROMAN EMPIRE*

ROBERT J. ANTONIO

University of Kansas

American Sociological Review 1979, Vol. 44 (December):895-912

One of the contributions of Max Weber is his distinction between formal and substantive rationality. When viewed in relation to his theory of bureaucracy this distinction provides a context for clarifying the domination aspects from the productive activities of organization. The case study of Roman bureaucracy is used to illustrate how the contradictions between two coexisting forms of rationality—one reflecting the control of persons and resources and the other the production (and distribution) of goods and services—contributed to the decline and collapse of the Roman Empire.

Max Weber stressed the "specific and peculiar rationalism of western culture" (Weber, 1958:26). Furthermore, he was seriously concerned about its continuing intensification and diffusion through a related set of ever advancing developmental processes involving the disenchantment of nature, the scientization of thought, the deepening penetration of advanced technology into practical activities and the bureaucratization of social life. Weber's discussion of western rationalization¹

does not posit movement toward a Hegelian rational society where truth is actualized in social relations. Instead, Weber limits his emphasis to advances in the spheres of rational calculation and exact coordination of collective action. This refers to increased technical efficiency in controlling both the material and human environments. For Weber, these were by no means utopian developments because the consequent advances in production were accompanied by new forms of domination, alienation and waste.

Weber (1968:85)² distinguishes between

* Direct all communications to: Robert Antonio; Department of Sociology; University of Kansas; Lawrence, KS 66045.

I am indebted to Michael Lacy for his careful reading and editorial, organizational and substantive criticism of several drafts of this paper. Also, David Willer has provided much insightful criticism and encouragement; he has significantly contributed to the work. Furthermore, thanks go to Scott McNall, George Ritzer, Alan Sica, Norm Yetman, and Augustus diZerega for useful comments and suggestions at various stages of the research. Finally, two anonymous *A.S.R.* reviewers provided solid criticism that contributed to the final draft. All these individuals have helped shape this essay, but I am alone responsible for any errors. This investigation was supported by University of Kansas research allocation #3485-x0-0038.

¹ Rationalization must be understood in relation to Weber's broader concept of reason. The term is most often associated with social action and structures emphasizing demystification, exact calculation, prediction and quantification concerning the *means* of action. This meaning is reflected in Weber's use of "instrumentally rational action" (1968:71-4), "technical rationality" (1968:63-8), "rational economic action" (1968:71-4) and "formal rationality" (1968:851-6). Weber contrasts this to "value-rational action" (1968:24-6 and "substantive ration-

ality" (1968:85-6) which involve reflection about ultimate ends. Weber's concept of rationalization refers to (see Gerth and Mills, 1958:51) the "disenchantment" of the world—the displacement of "magical elements of thought" by ideas which "gain in systematic coherence and naturalistic consistency." In other words, this means the growing dominance of formal reason. Horkheimer (1974:vii) captures the sense of this process: "'Reason' for a long period meant the activity of understanding and assimilating the eternal ideas which were to function as goals for men. Today it is not only the business but the essential work of reason to find means for goals one adopts at any time." Rationalization should be interpreted, in the broader sense, as the intensification of means-oriented reason in social and technical organization as well as action/thought.

² Here and throughout much of the paper, I am quoting from Weber's *Wirtschaft und Gesellschaft* (*Economy and Society* [1968]) edited in English by Roth and Wittich. This work is appropriate because it involves "Weber's major comparative treatment of forms of domination" (Roth, 1965:213). In this work *Herrschaft* is translated as domination. It means the situation in which the manifested will (*command*) of the ruler or rulers is meant to influence the conduct of one or more others (*the ruled*) and actually does influence it in such a way that their

the " 'formal rationality [my emphasis] of economic action' . . . used to designate the extent of quantitative calculation or accounting which is technically possible and which is actually applied" and *substantive rationality* involving "the degree to which the provisioning of given groups of persons . . . with goods is shaped by economically oriented social action under some criterion (past, present or potential) of ultimate values (*wertende Postulate*), regardless of the nature of these ends." Weber recognizes explicitly that the two types of reason are often contradictory. For example, he (1968:138) states that "the maximum of *formal* rationality in capital accounting is possible only where workers are subjected to domination by entrepreneurs." Weber asserts that this "is a further specific element of *substantive* irrationality in the modern economic order."

The contradiction of formal and substantive rationality is also evident in Weber's concept of bureaucracy. As he defines it, bureaucracy manifests extreme formal rationality. The core of the Weberian conception is the "master's" control of a hierarchy of officials coordinated through rational discipline. Weber (1968:1149) defined discipline as "nothing

but the consistently rationalized, methodically prepared and exact execution of the received order." His concept of bureaucracy includes many important characteristics: e.g., the existence of official jurisdictional areas, management based on written files, formal training, official activity demanding full working capacity, monetary wages and impersonal rules. Nevertheless, discipline and hierarchical power relations are the central and integrating attributes. Weber (1968:1149) asserts that bureaucracy is discipline's "most rational offspring." For this reason it "is technically the most highly developed power instrument in the hands of its controller" (Weber, 1968:991). Thus, Weber (1968:954) is able to claim, "*Rationally regulated* association within a structure of domination finds its typical expression in *Bureaucracy*."

Throughout his analysis of bureaucracy Weber emphasizes "compliance," "obedience," "rule" and "authoritarian power of command" (see Weber, 1968:212-26; 941-1005). For Weber (1968:975) bureaucracy means the "discharge of business according to *calculable rules* and 'without regard for persons.'" Its so-called technical superiority evolves from this disciplined "objective" activity which makes possible the efficient coordination of collective action. Bureaucratic discipline is similar in form to capital accounting in that both stress exclusively maximizing the calculability of means through the standardization of action.³ Both activities seek to exclude all matters extraneous to the specific relevant instrumental concerns. Weber (1968:975) asserts that bureaucracy advances "the more it is 'dehumanized,' the more completely it succeeds in eliminating from official business love, hatred, and all purely personal, irrational, and emotional elements which escape calculation." This list should be extended to include value-rational³ activities that are not part of the instrumental task, because these too are "human" actions that potentially threaten "official business."

As a structure of domination, Weberian bureaucracy is organized to achieve the

conduct to a socially relevant degree occurs as if the ruled had made the content of the command the maxim of their conduct for its very own sake. Looked upon from the other end, this situation will be called *obedience*. (Weber, 1968:946)

The English interpretation of *Herrschaft* has been the topic of controversy in recent years. Parsons (1960a:752) believes that "in its most general meaning" the term should be translated as "leadership" or "authority," not domination. The reader should see Roth and Wittich (Weber, 1968:61-2n), Eendix (1977:481-2), Cohen et al. (1975a; 1975b), Parsons (1960a; 1960b:149-55; 1964:58-60; 1972; 1975), Bruun (1972:287-8) and Hättich (1967). I concur with Cohen et al. (1975a:236-9) that Parsons overemphasizes the normative aspects of Weberian theory and leaves coercion underdeveloped. Furthermore, as I (Antonio, 1979) have shown in another paper, Parsons criticizes Weber for overemphasizing coercion and for adhering to a "zero-sum" (coercive) concept of power. Yet elsewhere he rejects interpreting *Herrschaft* as domination because it emphasizes coercion "rather than the integration of the collectivity, in the interest of effective functioning" (Parsons, 1960a:752). Thus, there are apparent inconsistencies in Parsons's own reading of Weber that could be construed to support the non-Parsonian interpretation of *Herrschaft*.

³ See fn. 1.

commands of those who control it. The occupants of the structure's various offices are expected to comply with the formally rational expectations of their roles. On the other hand, they are excluded from participation in substantive decisions and are often not even privy to information about them. Such policy defining activities are the exclusive prerogative of the masters.

Weber (1968:989) suggests that bureaucratic social structure is often accompanied by a "crypto-plutocratic distribution of power" in the broader social order. In such cases the bureaucracy is almost always a means for realizing the interests of a ruling elite. Thus, as in the capital accounting of the economic sphere, the highest level of formal rationality in bureaucracy is often substantively irrational. That is, when bureaucracies are instruments of elite domination, as they historically often have been, successful completion of formally rational routines involve expropriation, directly contradicting substantive rationality. In other words, the more efficient the bureaucracy in completing these routines, the more able the ruling elite is to maximize its control while minimizing its provisioning of the population.

When it is analyzed as a structure of domination, bureaucracy's corruption, waste, red tape and inefficiency in one context can be related logically as well as empirically to its speed, precision and efficiency in another. Weber believed that the master, on the basis of his/her control of the material means of management, dictates the organizational goals that shape production rationality. Furthermore, he (1968:992) argued that "administrative secrecy" and selective misinformation excludes the public from accurate knowledge of these goals. The official ideology of bureaucracy proclaims its production of necessary goods and services, while its operative goals almost always involve the maximization of power over people for the extraction, accumulation and control of resources. This situation requires the analyst of bureaucracy to consider two forms of organizational rationality—one reflecting production (and distribution) and the other the logic

of domination. The strength of Weber's approach is that it provides a context through which the relations of both modes of rationality are considered.

Extreme formal rationality and exact calculation in the service of bureaucratic ends may be irrational from the perspective of broader societal values and interests. For this reason, the understanding of bureaucracy as a structure of domination bears little relation to its official service goals, to the maintenance of social well-being or even to the long-term perpetuation of the bureaucracy itself. Corrupt, wasteful and inefficient behavior often is tolerated and sometimes even becomes a perquisite of office in "efficient" bureaucratic structures, so long as it avoids direct and serious interference with the master's power over persons and resources. These seeming contradictions are what Weber's approach points to so aptly.

This study concerns the core of Weber's approach, which portrays bureaucracy as a means of organizing the production of goods and services in a hierarchical social structure designed for the control of persons and resources. This general aspect of Weber's theory, which is operative regardless of the level of societal rationalization, sensitizes the analyst to complex, and often misunderstood, conditions resulting from the contradiction of domination and production in bureaucratic organization. The case study of the Roman Empire,⁴ which follows, illustrates the points made above. The value of this particular example is that the relations between domination and production are particularly clear and relatively unhampered by ideological debates

⁴ Although the analysis in this case study employs Weberian concepts, it is *not* derived from Weber's concrete analysis of antiquity. Weber (1968:969-70; 1976:364-5) expresses some concern about the role of bureaucracy in the decline of the Roman Empire. However, in one piece on Rome he (1950) stresses different factors than are discussed in my paper, and in still another essay on the topic (1976:336-66), although he gives some attention to bureaucracy, Weber's argument again emphasizes essentially different conditions than are stressed here. In conclusion, it should be understood that my paper is inspired by Weber's broader theoretical work, not his actual analysis of Roman society.

that surround modern social organization. Furthermore, since this is a historical case with a fixed periodization, the development of bureaucracy can be analyzed in relation to the long-term growth and eventual disintegration of the society. Finally, in Rome, as in modern society, bureaucratic organization grew to gigantic proportions and had substantial impact on the entire populace.

*Preconditions of Bureaucracy in the Roman Empire*⁵

According to Weber, bureaucratization is stimulated by a broad extension of administrative tasks (Weber, 1968:969). Furthermore, he argued that a tradition of internal peace, combined with an increased demand for order, is one of the conditions that sparks such expansion. Weber implied that bureaucracy is desirable in this situation because it is the most efficient means for coordinating the diverse activities of the masses involved in large-scale administration.⁶ Finally, the actual development and continued existence of bureaucracy requires a reliable revenue source, a stable system of taxation and a rationally calculable basis for regular compensation of bureaucratic officials (Weber, 1968:963, 968). Overall, Weberian theory implies that bureaucracy is most likely to emerge in large, urban

dominated states with monetary economies.

The Roman Empire was an urban civilization—cities and towns directed the course of its economic, political and cultural life (Jones, 1974:40; McEvedy, 1967a:84). The Empire included a massive geographical area and numerous provincial peoples (see McEvedy, 1967a:76–92; 1967b:2–23). Money, which was the dominant means of economic exchange in both urban and rural areas (Duncan-Jones, 1974:6–7), provided a rational basis for a relatively active revenue producing local and long-distance trade (see Loane, 1938; Wheeler, 1954; Pirenne, 1969; McEvedy, 1967a; 1967b). Although most of its population and political power was urban, Rome's primary source of wealth was from the land (Jones, 1974:35–7). Agriculture provided much more revenue than nonagricultural commerce and manufacturing (Finley, 1973:150–76). However, Roman farming was organized for monetary sale in urban markets, and was, for this reason, clearly different from the subsistence production of feudalism. Agricultural wealth, particularly that produced in the provinces, provided a stable, continuous source of tax revenue (Jones, 1974:82–3).

The Roman Republic⁷ (which preceded the Empire) collapsed after an intense period of internal conflict and disorganization (see Brunt, 1971:112–56). The early emperors used the military to restore the peace and order to which Romans long had been accustomed (see Brunt, 1971:61, 153). Furthermore, they extended the Empire's borders by the same means (see McEvedy, 1967a:74–85). The restoration of order and the governance of newly acquired territories swelled administrative tasks and promoted continued bureaucratic development. Initially, the emperors were extraordinarily successful, since their efforts culminated in the Pax Romana—a two-hundred-year period of prosperity, internal peace and hegemony over neighboring enemies.

⁵ The Roman Empire at its height in the second century A.D. extended from the Iberian Peninsula across Asia Minor and from England to the Atlas Mountains in North Africa (see McEvedy, 1967a:81). The Empire is usually dated from the beginning of the reign of Augustus in 27 B.C. until 476 A.D. when "the last remaining country of the West . . . had become just another German kingdom" (Grant, 1978:435–6). I have not dealt with the division of the Empire into its Western and Eastern sectors. Furthermore, the Eastern Roman Empire, which survived after 476 A.D. is not discussed. This elimination was necessary in order to keep the scope of the research somewhat manageable.

⁶ Weber (1968:972) stated, however, that the "power expansion" of the Romans did not result in a bureaucratic polity. Here, he is implying that Rome was not thoroughly bureaucratic in the fashion of modern monocratic bureaucracy. However, he recognizes at other points that Rome, despite its patrimonial elements (see fn. 8), did have a relatively advanced bureaucratic organization (see Weber, 1968:969–72).

⁷ The Roman Republic preceded the Empire and is usually dated from 509 B.C.—the approximate date of the Roman expulsion of the last Etruscan king—until Julius Caesar's first consulship in 59 B.C. (see Brunt, 1971:1).

Leveling and Plutocracy in the Roman Empire

Weber (1968:225,985,989) asserts that at least a relative social "leveling" accompanies bureaucratization. This involves a tendency toward formal law which emphasizes "abstract regularity of the exercise of authority" (Weber, 1968:983). On the other hand, Weber also suggests that bureaucratization promotes "plutocracy." Put in the context of other Weberian arguments concerning concentration and rationalization, these two seemingly contradictory points can be construed to mean that bureaucratization divides a society between those who control the bureaucracy and those who are controlled by it. In fact Weber (1968:985) states that the "decisive" fact "is the *leveling of the governed* in the face of the governing and bureaucratically articulated group, which in its turn may occupy a quite autocratic position, both in fact and in form." Bureaucratization erodes traditional statuses that hinder bureaucratic placement of officials. This does not eliminate hierarchy, but merely reshapes it to fit the needs of the nascent bureaucratic relations of domination. For example, Weber (1968:989-90) pointed out that leveling of feudal privileges benefitted the domination interests of the rising capitalist class. According to Weber (1968:987), bureaucracy is an instrument for "rationally organizing authority relations," adaptable to the interests of any group able to control it. Historically, the controlling groups have been those with military and economic power. As a rational structure of domination, bureaucracy has been a means for establishing, stabilizing and extending the domination of powerholding groups.

A *slight* leveling process occurred shortly before and after the establishment of the Roman Empire when the upper classes made small concessions (e.g., tax reform) to the masses that reduced slightly the impact of inherited status. Furthermore, the bureaucracy, through the proliferation of merit requirements, also contributed to the slight erosion of the traditional status hierarchy. However, there was no mass destruction of traditional statuses as occurred in early capitalism. In

the formation of the Roman Empire, unlike the capitalist revolution, the ancient ruling class maintained its position despite changes in social structure. The emergent bureaucracy was shaped to, and even took advantage of, the existing stratification system. As a result, Roman bureaucracy contained an important patrimonial strain.⁸ Despite this, its strong monetary and legal-rational attributes made Roman bureaucracy more similar to modernity than to feudal patrimonialism.⁹ In this section, Roman class structure will be discussed, but its links to bureaucracy will be analyzed more fully below.

Rome was stratified by wealth, political power and prestige, which usually coincided. Furthermore, Roman social structure was characterized by extreme verticality and low levels of social mobility (see MacMullen, 1974:88-120). Two aristocratic orders monopolized the most powerful and lucrative social, economic and political positions. It has been estimated that the senatorial order constituted approximately two-thousandths of one percent of the Roman people. The less powerful equestrian order (Equites) was probably less than a tenth of one percent of the population.¹⁰ Both orders were concen-

⁸ Patrimonialism (Weber, 1968:1010-5) refers to situations where the subject is bound to a master by loyalty and is required to support him with all possible means. This also involves decentralized domestic authority and land distribution to dependents. Weber (1968:1014) considered Rome a "patrimonial state"—where "the most fundamental obligation of the subjects is to the material maintenance of the ruler." This is contrasted with the bureaucratic, modern state where legitimate authority is much more impersonal, diffuse and normative. The Roman system contained patrimonial and bureaucratic elements—the balance between the two varied in different periods of the Empire. *At no time* did the Empire approach the degree of bureaucratization of modern states, nor was it ever as patrimonial as feudal society.

⁹ I do not want to push the comparison of Rome and modernity too far. I am only stating that Rome was far more bureaucratic and formally rational than feudal society.

¹⁰ The Roman orders were hereditary, but were still somewhat permeable. For example, new members were often assigned to the senatorial order by the Emperor. Also, occasionally senators lost their wealth and had their titles taken from them. Finally, money was the most important aspect of status in the Roman Empire. Thus, I will use the term *class* when referring to the different groups in the Roman social

trated in the most populous cities, but even there they constituted only a tiny minority (MacMullen, 1974:88-92). Ownership of very large amounts of wealth were required for maintenance of aristocratic title, status and position. Senators had to own property worth at least 250,000 times a laborer's daily wage, while equestrians qualified for their position with less than half of that estate. In most cases the aristocrats' wealth far exceeded the required minimums (Duncan-Jones, 1974:12, 17-32). In short, the two orders owned much of the Empire's wealth and controlled most of its social and political power. Despite the autocratic position of the emperor, the aristocracy can be considered a ruling class.¹¹

The régime was safe because it answered the needs and interests of the higher orders. No single man could govern the empire unaided, and every emperor was bound to look primarily to those orders for his advisors and officials; they had almost a monopoly of the education and experience required. . . . The emperors might persecute individual senators or Equites, but it did not even occur to any of them (not one was a man of original views) to assail the vital interests of the whole upper class, and if they had tried, they could not have survived. . . .¹² (Brunt, 1971:154-5)

Seneca once remarked, "[H]ow great a majority are the poor" (MacMullen, 1974:87). The rich and poor were recognized respectively as *honestiores* and *humiliores* (Finley, 1973:87). The state's attitude toward the humiliores was aptly

represented in the "law of debt" which applied exclusively to the poor in relation to the rich. According to this law, the defaulting debtor was forced into compulsory labor, a condition that could sometimes be extended to a debtor's children (Finley, 1973:40). This law represented only one dimension of the suffering of the underclass. The masses lived in abject poverty in the starkest, most unpleasant and dangerous conditions imaginable (see Mumford, 1961:205-48; Carcopino, 1973:22-51; MacMullen, 1974:1-87).

Furthermore, the classes were not spatially segregated, and thus they frequently met in the streets and other public places. The poor were expected to show fawning deference toward the rich and even to tolerate insult and/or physical violence without retaliation. Roman documents indicate that "honorable" and "good" were synonymous with wealth, as poverty was equated with "vile," "dishonored" and "ugly" (MacMullen, 1974:116-7). Romans believed that the "poor deserve to be held in contempt because they have no money" (MacMullen, 1974:116).

It has been estimated that slaves, the remaining segment of the Roman underclass, composed (at the height of the Empire's affluence) about a quarter of Italy's population and about one tenth of that in the provinces (MacMullen, 1974:92). Despite the notable exceptions of favored household slaves and certain successful freedmen (emancipated slaves), the plight of slaves was at least as unfavorable as that of other poor persons (see Finley, 1973:62-94). Slaves were fed, clothed and housed, but at the cost of their dignity and freedom. Frequent references to brutal treatment of slaves in Roman plays—"scourging, lashing, flogging, breaking ankles and torture and the ever-present fear of death by crucifixion"—provides insight into the nature of the master-slave relation (Cowell, 1975:102).

The Roman attitude toward hierarchy is expressed by the younger Pliny who said, "Nothing is more unfair than equality" (Brunt, 1971:155). The domination of the poor by the rich was brutal and direct without the mediation of ideological legitimation. Occasional largesse was not a sign of compassion, but was instead both

hierarchy (although slaves should be kept analytically distinct from the rest). Recent Roman social historians also have used the term class to discuss the Roman stratification system (e.g., Brunt, 1971; MacMullen, 1974). However, it is still crucial to keep in mind that the social groups referred to cannot be equated with modern social classes (see Finley, 1973:48-50).

¹¹ The term *ruling class* is not my own imposition upon the Roman system. I am following MacMullen's (1974:101) interpretation. Furthermore, one must not think of this group as being homogeneous in status, wealth and power.

¹² Despite this, there were tensions between the autocratic emperors and the upper classes. The intensity of these strains and conflicts reflected the social-economic situation and the particular personalities of the respective emperors (see Brunt, 1971:154).

a display of wealth and a means of securing servile clients. The resentment of the poor sometimes exploded in riots, arson or attacks on the rich (see MacMullen, 1966:163-91), but these disorders were almost always put down quickly, without severe threat to the social order. The extreme class division in Roman society existed before bureaucratization began. Once bureaucracy developed, it became a microcosm of the broader societal class domination as well as a means of perpetuating it.

Origins and Form of Roman Bureaucracy

Despite the abject condition of the masses and the tiny size of the power-holding group, the Roman ruling class had considerable continuity in its long rule (see MacMullen, 1973:101). Its hegemony was made possible by bureaucratic domination in which the military played a central role. Weber (1968:1149) considered bureaucracy the most rational extension of discipline. Furthermore, he (1968:1155-6) argued that "military discipline gives birth to all discipline." Roman bureaucracy first appeared as a routinization of the military discipline¹³ for which the legions were long famous (Gibbon, 1932:10-7). The legionary was sworn to unquestioned, exact execution of orders regardless of personal cost (Grant, 1974:xxvi-xxx). Furthermore, his officers were so unyielding in their demands for obedience that he often feared them more than the enemy. Finally, the legionary was almost always executing orders. When he was not fighting or working on public projects, he learned new skills or perfected old ones. The rigor of training is expressed in Gibbon's (1932:11) assertion "that the effusion of blood was the only circumstance which distinguished a field of battle from a field of exercise."

The Roman imperial military (see Garland, 1975; Charlesworth, 1951:29-48; Grant, 1974; Luttwak, 1976) contained

many of the characteristics of bureaucracy discussed by Weber (1968: 217-26, 956-69). It was "the earliest of the world's standing armies in which the soldiers were regularly recruited, and cared for, and finally pensioned off, by the state" (Grant, 1974:xv). The Roman military was a hierarchy of offices, each with fixed jurisdiction over a predefined set of activities. Impersonal administrative rules regulated relations between offices and people. There was also a chain of command and rigid supervision of lower offices by higher ones. Furthermore, there was even considerable emphasis upon files and written documents. The legionary received a fixed salary, was granted near-life tenure, had plentiful opportunities for advancement, received a bonus at retirement and even had veterans' benefits (Garland, 1975:114-7). The competent soldier knew he would be promoted and with some ingenuity could achieve high rank and generous material reward. As the bureaucratization of the Empire advanced, the emphasis on merit in the military ranks grew. For example, in the Late Empire "barbarians" were allowed to serve and could even earn high rank. Furthermore, the highest ranks, such as legionary commander (*legatus*), which were formerly reserved exclusively for the upper classes, were made open to all qualified candidates. The Roman soldier was a professional who underwent specialized training, acquired military discipline and received the predictable rewards of a bureaucratic career (Garland, 1975:112-6, 172; Grant, 1974:xvii-xxxiv).

The legionary's compliance with his commanders' direct orders was only one feature of Roman military discipline. Another important aspect, one that contributed greatly to the emergence of bureaucracy, was the coordinated administration of thousands of orderlies, accountants, messengers, checkers, surveyors, road builders and naval personnel (see Charlesworth, 1951:46-8; Grant, 1974:240-1). The emphasis on large-scale planning and calculation was evident in every aspect of Roman military activity ranging from the construction of the most advanced pre-modern system of roads (which were built

¹³ Military discipline and even military bureaucracy existed in Rome before the establishment of the Empire. However, the military definitely was more intensively professionalized and bureaucratized during the Empire (Grant, 1974:3-99).

for military use) to the military payrolls, which were managed with meticulous care (see Charlesworth, 1951:37-42). It is in this support service and broader administration that bureaucratic discipline emerged clearly from military discipline. Bureaucratic discipline retained the strict subordination of the military, but refined it into a more impersonal, rational form in which compliance occurs without the *direct* and continuous observation and intervention of higher officials. Their immediate presence is replaced by impersonal routines, rules, written memos, rewards and threats. The resulting bureaucratic coordination provided the Roman army with an advantage over less organized but numerically superior enemies (see Luttwak, 1976:1-5).

The Empire was instituted after the Roman Republic collapsed from corruption, class war and inefficiency (see Brunt, 1971:112-56). The first leader of the Empire, Augustus (27 B.C.-14 A.D.), was a charismatic military leader who commanded complete loyalty from the army. Augustus instituted extensive administrative reforms which established the roots of a militarized, *state bureaucracy*. He attempted to reduce corruption and improve administrative efficiency by transferring military discipline to the public realm. Civil servants were expected to take a military oath and were required to be either active military personnel or to have had extensive military experience. Public officials were expected to express the same exact compliance with orders that characterized the legions.

During the prebureaucratic Republic, taxes were collected by private corporations under government contract (Jones, 1974:151-85; Frank, 1920:139, 172, 224). The *publicani* (tax farmers) had broad powers because the methods of collection were not systematized nor highly regulated by the state. Since their first interest was profit, rather than the equitable collection of taxes, the publicani subjected provincials to gigantic corruptions (Jones, 1974:163-4; Mommsen, 1958:560-3; Mattingly, 1910:1-2). The gross injustices of this system contributed greatly to the conflicts of the Late Republic. The replacement of the tax-farming operation

with a public financial administration was an important step in the Augustinian pacification. Augustus desired to put imperial taxes and finance under the control of disciplined state officials guided by centrally administered tax rates, collection methods and accounting procedures. This was designed to increase state revenue, while at the same time mollifying the complaints of overtaxed provincials (see Mommsen, 1958:565-8).

In the Early Empire the administration of finance, as well as other branches of the Roman state, lacked "organs of transmission" (Homo, 1929:308). The early emperors simply utilized their own private staffs for state affairs. Emperor Claudius (41-54 A.D.), instituting the imperial secretariat, transformed this household service into a department of state (Homo, 1929:309-11). The establishment of a professional staff gave continuity to the administrative operations of the central government. This bureaucratic routinization reduced the impact of the nonrational personal attributes of individual emperors on the day-to-day functioning of the state. Emperor Hadrian (117-138 A.D.) continued this process by bureaucratizing the imperial *fiscus* (central treasury). Again, management by the imperial household was transferred to a professional ministry (Homo, 1929:307-8). These changes were only a small part of a very broad process of bureaucratic expansion. As the Empire grew, so did the number of ministries, departments and officials (see Homo, 1929:349). This growth contributed to the routinization and regulation of administrative activity in a hierarchical structure ruled by the emperor.

In the Late Empire (third century A.D.) intense bureaucratization was manifested in administrative unification (see Homo, 1929:321-43). Special regional privileges were removed, large provinces were divided into similar small units, civil and military powers were separated and uniform intermediate bureaucratic organs were created to link the central government with provincial units (Homo, 1929:341-3). As unification of the provinces proceeded, so did standardization of the individual official's administrative duties. Diverse roles were united in

"a single imperial civil service" (Homo, 1929:35). The Roman state gradually evolved into a full bureaucracy organized on the same basis as the military. In the state administration there was a strict order of rank defined by uniform rules. The "officials had an exact administrative status, which, in return for definite professional duties, entitled them to a variety of privileges" (Homo, 1929:358). The latter included career security with promotion based on seniority, a regular salary, exemptions from certain taxes and services, judicial privileges and honors (Homo, 1929:359-61).

Rationalization of law accompanied the formation of the Roman financial administration and broader state bureaucracy. As Weber (1968:998) suggested, the development of systematized law is central to the broader process of societal rationalization. Law is the primary means for transforming individual discipline into impersonal, bureaucratically coordinated routines. Written rules and formal means of administering them promote the standardization of action in specialized roles. Progressive bureaucratization of the Roman state involved instituting a large body of administrative law, which first appeared in the second century A.D., and grew steadily until the Empire's collapse. The state "bureaucracy demanded a cognoscible, uniform, and definite administrative law, and the jurists, who belonged to the bureaucracy, met the demand" (Schulz, 1946:139).

In the Republic, law was monopolized by persons, without expertise or training, purely on the basis of their aristocratic background (see Schulz, 1946:1-98). Accurate legal texts were unavailable and the entire administration of law lacked system. Legal competence was equated with oratorical grace, not with skill in applying legal knowledge. On the other hand, in the Empire upper-class status was no longer the exclusive qualification for legal office. The bureaucratization of the state and the growing body of administrative law it required necessitated the development of legal texts and relatively elaborate systems of legal knowledge. Thus, attorneys and jurists were more often expected to have expertise, spe-

cialized training and certification (see Schulz, 1946:139, 272-99). During the Empire a cadre of professional jurists became salaried members of the ministry of justice (see Schulz, 1946:100-1). This office brought legal experts together to extend and refine the legal superstructure of the state bureaucracy as well as the overall administration of justice.

Bureaucratization and Concentration of Power

Weber (1968:980) argued that bureaucratization goes hand in hand with the centralization of power over persons and resources. Although centralization contributes directly to domination, it cannot be separated from production. The bureaucratic master argues that efficiency in domination is necessary for efficiency in the production of services. This claim means that discipline in the ranks will sharpen the coordination of activity and ultimately result in improved service. However, as Weber implies, and the Roman case demonstrates, the tendency toward efficient domination tends to become an end in itself somewhat disconnected from any true commitment to service.

In the Roman Empire bureaucratization was accompanied by a symmetrical and related move toward totally centralized power (Homo, 1929:299). The official justification for bureaucracy was the maintenance of order, reduction of corruption and provision of basic state and municipal services. However, action based on these goals resulted in the transference of power from the senate and other representative bodies (dominant during the Republic) to the Emperor and his delegated officials. The central mechanisms of domination were streamlined by tactics couched in a mystifying rhetoric of bureaucratic efficiency. For example, Augustus instituted the division of the Empire into armed and unarmed provinces. The "safe" provinces as in the Republic, were administered by the senate, while the "threatened," or armed provinces were governed directly by the Emperor (Stevenson, 1939:101-4). The official reason for this action was the maximization of administrative efficiency

in the regions most prone to social disorder and/or invasion. The act may have appeared as a reduction in coercion since it demilitarized the central and most politically important provinces, but, in reality, it enhanced the Emperor's power by giving him absolute authority in a large part of the Empire, reserving his right to intervene in the remaining parts and empowering him to change the designation of provinces whenever he desired (see Homo, 1929:317). In this case, as in many others, changes aimed at improving efficiency also contributed to the Emperor's control of Roman society.

The successors of Augustus continued the dual processes of bureaucratization and centralization until any semblance of power was removed from elective bodies. For example, the election of magistrates was taken away from the popular assembly and given to the senate, which comprised the upper echelon of the ruling class. This was portrayed as another aspect of the rationalization of services. The senator's experience in official capacities, as well as that gained in governing his extensive private domain, allegedly provided him the required technical expertise for competent calculations about judicial, political and other official appointments (see Stevenson, 1939:106). However, even the power of the senate gradually was eroded (Homo, 1929:303). The emperors, who eventually gained full power of legislation and appointment, transformed the senate into a rubber stamp body by stacking it with their own appointees (Stevenson, 1939:108). The restructuring of the Empire, begun by Augustus, was characterized by "the gradual development of bureaucracy, the elimination of the senate from the work of administration and the concentration of it in the hands of the emperors" (Rostovtzeff, 1926:77-8). Even the financial reforms contributed to this process by transferring total power over state expenditures to the emperor and his staff. These bureaucratic reforms and their alleged contribution to administrative efficiency were the primary justifications for the change from republicanism to monarchism (Stevenson, 1939:147).

The bureaucratization of Roman law

concentrated "a monopoly of the development of the law in a government office, to codify the law and to control its application and execution in detail" (Schulz, 1946:100). Gradually, the command of the emperor replaced the citizenry as the supreme authority of state (Crook, 1967:20). During the Republic, jurists composed formulae of actions and defenses—*responsa*—that constituted new law. However, in the Early Empire, Augustus ruled that only jurists with special imperial authorization could have their *responsa* accepted as law (see Schulz, 1946:112). Later in the Empire, authorization of individual jurists was abandoned in favor of a law-making body—the *consilium*—appointed by the emperor (see Schulz, 1946:112-4). This permanent salaried group of officials in a standing organ of state (Schulz, 1946:118) provided the emperor with a central office to coordinate all judicial activities related to the formation and interpretation of law. From this time onward, the emperor, at minimum, had to approve new law, but more often he instituted it through edicts.

The early success of bureaucratization deflected citizens' attention from the autocratic centralization of power that accompanied it. Initially, bureaucratic professionalization reduced corruption and increased productive efficiency. However, as the number of appointive positions multiplied and elective ones declined, the problems that plagued the pre-bureaucratic Republic reappeared and were compounded by bureaucratic intransigence and red tape. Inefficiency and corruption grew in almost direct correlation to the heightened demands for certification and expertise (Rostovtzeff, 1926:460). In the Late Empire it is evident that domination, and not service, was the real goal of bureaucratization.

Achievement, Ascription and the Maintenance of External Social Hierarchy in Roman Bureaucracy

Roman bureaucracy had a patrimonial strain; it did not go nearly as far as modern bureaucracy in reducing the impact of arbitrary ascriptive characteristics. Modern ascription is less direct, fixed and for-

mal than the Roman type. Modernity puts more emphasis upon intergenerational advantages transmitted in a class-based educational system, than upon simple inheritance (see Weber, 1968:303, 998–1003; Bowles and Gintis, 1977; Collins, 1971). However, Roman bureaucracy, despite its patrimonial elements, also emphasized merit, training and credentials: Rome is more like modernity than any purely patrimonial system (e.g., feudalism), because it harmonized achievement with class ascription.

Weber did not envision a completely meritocratic process of bureaucratic appointment. It would have contradicted both his analyses of bureaucracy as a power system and his assertions about the “plutocratic” tendencies of bureaucratic societies. Appointment exclusively on merit would open vital offices to technically competent persons with interests opposed to those of the master. An able enemy in an important office is contradictory to “administrative secrecy” and to the “power interest of the given structure of domination *toward the outside*” (Weber, 1968:992). To avoid these problems, bureaucracies, whether patrimonial or highly rationalized, must screen officials on the basis of interests as well as ability.

Roman aristocrats actively participated in the bureaucratic process through their positions in high level state administration (see Stevenson, 1939:108). The rationality reflected in the bureaucratic emphases on skill, training and certification was not contradictory to the broader ascriptive universe within which they operated. In short, the qualifications purported to reflect merit were distributed with a systematic unevenness. The upper-class monopoly of them insured that able persons with the greatest interest in preserving the social order were placed in the highest offices. For example, senators usually were appointed to the most important political positions, while equestrians headed most of the high-level economic offices. Thus, the emperor relied on the aristocratic class to preserve the hierarchical relations of domination through their bureaucratic offices.

The lower and middle offices of the

Roman bureaucracy also illustrate the linkage of achievement and ascription. The actuaries, cashiers, accountants and other petty officials in the financial administration frequently were selected from slaves and freedmen (Jones, 1960:159–60). These individuals were often household slaves (or former household slaves) who had formerly managed the financial affairs of their aristocratic masters. They were well-qualified because they were trained from childhood to occupy roles of financial responsibility. Furthermore, their social and material interests were connected directly to the ruling class. It was their service to the elite that elevated these fortunate slaves and freedmen above the rest of the masses.

Another source of lower officials, especially those assigned to legal and police duties, was the military (Jones, 1960:161–4). Legionary privates from humble origins considered their selection for the civil service an important promotion and usually remained in civil bureaucratic careers permanently (Jones, 1960:162). Their military experience provided the necessary preparation for their bureaucratic roles and insured their commitment to preserving the social order. In general, Roman bureaucratization intensified the emphasis on achievement, but at the same time preserved and even improved the means of ascription. Lower bureaucrats were drawn from groups socialized for obedience. Furthermore, these groups had already benefitted from serving the ruling class in capacities similar to their new roles.

Roman education also reflected the linkage of achievement and ascription. Education was not compulsory or state financed, but schools were widespread and rather uniform (Bonner, 1977:328–33, 146–62). The school system had three basic levels: primary school, where students were taught basic reading, writing and arithmetic; grammar school, which emphasized grammatical study of Greek and Latin; rhetoric school, which stressed advanced language skills, especially oratory and debate (Bonner, 1977:165, 250–3). These schools were usually quite small (rarely more than 60 students and often

only ten or less) and were supported by direct student fees. The very wealthy often did not attend the schools, but studied at home with their parents and/or private tutors.

The content of Roman schooling was very different from modern education because it lacked technical training and science. Instead, attention was directed to "effective public speaking" which was "the prime objective of the standard school curriculum" (Bonner, 1977:331). Language was related intimately to public image and was a primary badge of worthiness. Eloquence was an important measure of a person's qualification for the legal profession, political life and high state office (see Bonner, 1977:66-89). Despite its nontechnological nature, Roman pedagogy was highly structured, methodical and thorough (Bonner, 1977:328-33). Rhetorical training was especially rigorous since it followed the rather formal and complex style of argument used in courts of law (Bonner, 1977:288-9).

The socioeconomic consequences of Roman schooling were not unlike those of modern education. Educational goals involved the nurturance of socially desirable personal characteristics important for occupational placement, political office and social prestige. Roman education was achievement oriented. Nevertheless, class ascription was preserved and even celebrated. Wealthy children simply had an overwhelming advantage with respect to the favored traits of the educational process. Rich Romans had highly refined linguistic skills which they carefully nurtured in their offspring. The sophisticated language training of wealthy children often culminated with trips to Greece for advanced training under renowned rhetoricians (Bonner, 1977:10-9). On the other hand, poor families could not provide an adequate early learning context, nor could they afford tutors or extensive schooling. Roman socialization and schooling assured persons their acquisition of cultural credentials of achievement consonant with their location in the social order. In education, as in the rest of Roman society, achievement was significant, but its sphere always was circumscribed by class ascription.

The Contradiction of Production and Domination and the Roman Decline

Thus far, it has been demonstrated that Roman bureaucracy constituted a concentrated and relatively rational structure of domination that ruled over a sharply stratified society. In the remaining section I will discuss how the increasing domination efficiency of this structure directly contradicted the productive (service) needs of the broader society and ultimately those of the bureaucracy itself. As the bureaucracy matured, domination evolved as its exclusive operative end, while the production of services was reduced to ideology. The resulting extreme efficiency in domination permitted the dominant class to perpetuate its control of resources without making necessary positive adjustments to severe tensions and breakdown in the social and economic spheres. Thus, efficient domination preserved, and even intensified, conditions which contributed to the erosion and eventual destruction of the socioeconomic substructure of the bureaucracy.

The third century A.D., a period of political strife and foreign invasion, was devastating to the Empire (Rostovtzeff, 1926:440). Between 235 A.D. and 284 A.D. there were 20 emperors recognized by the senate, approximately 20 others who claimed the throne with military support and numerous others who had similar aspirations (Finley, 1973:91). The military contributed to the divisiveness and disorder by making repeated, and often violent, political interventions. The ruling class eventually regained control of the structure of domination, but the Empire never recovered from the related economic and social upheavals. Furthermore, during and after this period the costs of national defense rose sharply, while revenue from plunder, foreign tribute and imported slaves was reduced drastically.

The political stabilization of the late third and early fourth centuries A.D. was achieved through increased bureaucratization of the state and military (Finley, 1977:140, 144). Emperors Diocletian (284-305 A.D.) and Constantine (306-337 A.D.) thoroughly professionalized and enlarged the military, and, in the process,

subordinated it to political authority. Civilian and military assignments were separated to prevent the military from meddling in political affairs (see Rostovtzeff, 1926:449–87; Barrow, 1970:163–74). In this way the military was brought under the firm control of the ruling class and its bureaucratic administration. The most general trends after the third century involved an increasingly powerful and centralized state bureaucracy controlled from the emperor's office. From this point onward, the exclusive response to economic crises, internal revolts and foreign invasions was "to tighten the bureaucracy and strengthen the instruments of the state, the army, the tax collector and the secret police" (Walbank, 1969:67; see Finley, 1977:140).

In the fourth century A.D. the ruling class was fully reestablished with an influx of new members from the military and civil bureaucracies (see Bernardi, 1970:42). Initial reforms brought hope of wealth redistribution, but the land—more than ever the primary means of producing wealth—remained concentrated in the hands of the tiny aristocratic class, preserving the radically stratified social order (see Bernardi, 1970:44–52; Finley, 1973:91–2). Although the extreme centralization of power in the emperor's office reduced the political independence of the aristocratic class, the imperial bureaucracy continued to draw its highest administrators from it. Furthermore, through its edicts and functioning, the state bureaucracy successfully protected and even extended aristocratic interests. As a result, the social hierarchy, based almost entirely on wealth, became more elaborate and petrified in the Late Empire (see Finley, 1973:51).

The massive, centralized bureaucracy required large surpluses for its maintenance and growth (Finley, 1973:90; Grant, 1974:398). The primary tax, which produced over 90% of the Empire's revenue, was on agriculture (Jones, 1974: 82–3). The high rate of taxation, which was accelerated sharply by bureaucratic expansion, (as well as other revenue problems), created new, heavy financial burdens borne almost exclusively by smallholders (Jones, 1974:86; Finley, 1973:91). The

large landowners had numerous ways to evade taxes completely, but even when these failed they were taxed lightly because they were entrusted with the job of assessment (Bernardi, 1970:58). The more that the revenue needs of the state expanded "the hotter the race for [tax] exemptions for classes and professions grew" (Bernardi, 1970:65). At the same time, tax pressures and penalties became almost unbearable for the humble classes. When exorbitant taxes were combined with periodic floods, drought or other natural catastrophes, the smallholder was crushed. Furthermore, when the tax rates were at their highest and most regressive level, the poor tax delinquent was treated without compassion. While the aristocracy's tax arrears were forgotten, the poor were forced to pay on time (Finley, 1973:91). When they could not, they lost their few possessions. Even the Catholic church abolished its tradition of granting asylum to "debtors of the treasury" in 392 (Bernardi, 1970:55).

Generally, the rich were able to maintain their wealth, despite the shrinking economy drastically weakened by the rising costs of bureaucracy. On the other hand, small independent producers were forced either to abandon their land or to put themselves under the protection of large landowners (Walbank, 1969:66; Bernardi, 1970:55; Jones, 1974:82–9). Aristocrats incorporated small holdings into their plantations, either by direct ownership or through clientage (the serf-noble relation that foreshadowed feudalism). This process contributed to more extreme concentration of wealth and power and further reduced agricultural production.

When conflict and economic decline intensified in the fourth and fifth centuries, the tendency was "to increase the number of officials, to simplify and standardize their duties, and to a certain extent to give the hierarchy a quasimilitary character" (Rostovtzeff, 1926:459). In short, the emperor attempted to stabilize the economy by extending the means of domination. The perpetuation of the social order depended upon the continual increase in both the efficiency of coercion and the rate of surplus extraction from the masses. However, the very efficiency of

bureaucracy in the preservation of the class-based relations of domination insured that the contradictions of the social system would remain unresolved.

The Roman ruling class utilized the bureaucracy to control the masses militarily, legally and financially. However, the domination system retarded the development of new social forces of production. The rates of extraction from the obedient human machinery were high enough that the dominant class never attempted to rationalize production. Instead, almost all rationalization in the Empire was limited to the sphere of domination. Thus, despite Rome's relatively advanced development, there never was any impetus toward technological revolution.

Efficient domination not only closed potential avenues of economic development, but it also devastated the traditional economy. The gigantic bureaucratic apparatus was extremely costly to maintain, since the horde of "officials and soldiers had become more numerous than the taxpayers" (Bernardi, 1970:52). The poor were not only burdened by the direct costs of this behemoth structure, but were also victimized by ubiquitous bureaucratic corruption (Rostovtzeff, 1926:460). Corruption was so widespread and accepted that it should be viewed as a systematic element of the domination system and not as foreign or pathological to it. Corruption allowed petty officials to make a living wage and high officials a luxurious one. In the Late Empire the pursuit of gain by any means possible was so much a part of bureaucratic functioning that moral prohibitions against corruption lacked structural foundation.

Each bureaucratic response to the growing socioeconomic crisis increased taxes and further strained the economy. After drastic erosion of the tax base, the rulers were forced, by economic exigency, to demand a greater contribution from large landowners. However, the latter had grown stronger from the expansion of their estates (and patrons) and could successfully resist the taxman. Furthermore, the military was occupied with the problem of foreign invasion and could not be used on a regular basis against the powerful landowners. In its last stage, the

Empire's disintegrating, urban-controlled economy began to germinate its opposite—the estate economy of feudalism. This constituted a regression at a time when technical advances were necessary to preserve the Empire. The main point is: the aristocracy's success in rationalizing domination deepened problems in production. Roman agriculture, which had begun to suffer the long-term negative effects (e.g., overcropping, deforestation) of its traditional method of "dry farming," required innovative changes if it was to continue supporting the urban population and its expensive social structure (Lopez, 1976:3–6). However, these obvious technical matters were ignored completely. Only the means and levels of surplus extraction mattered to the ruling elite.

The emperor and the high managers of the Roman bureaucracy operated within the practical sphere of its power system, concerning themselves exclusively with overriding, short-term power interests. The bureaucratic reaction to each step of the pyramiding crises was to extend and refine the means of domination. While these moves were couched in a service ideology, the ultimate end was individual gain and the perpetuation of the superordinate class. The leadership's responses aimed at preserving the existing relations of domination and their required rates of extraction without regard for the concrete social and economic problems which were destroying the system. As a result, the means of efficient domination became an important contributing factor to the eventual Roman collapse. The bureaucratic structure of domination contained the short-term threats to the social order, but in defending the latter, it preserved the very forces that were contributing to the destruction of the economy—the overconsumption of the ruling class and the costs of large-scale bureaucracy. In the end, the bureaucracy became self-contradictory and absurd.

Conclusion: Contradictions of Bureaucracy

The levels of domination and production in historical bureaucracies vary with

the concrete conditions of the particular organization and its social-economic context. This is a matter of empirical research that no theory could foretell. However, theory can sensitize the researcher to possible foibles of the conventional wisdom that portray bureaucracy in terms of its service ideals, rather than its actual operations. According to Weberian theory, a bureaucracy is always a domination system—by definition it must be based on hierarchy, discipline and control. On the other hand, the *actual* production of services for the general population is not necessary to the definition of bureaucratic organization. A historical bureaucracy may or may not deliver services.¹⁴ Secondly, the theory suggests that bureaucratization (the process of bureaucratic extension or intensification) entails a centralization of power for domination efficiency. The process heightens discipline and extends organizational control mechanisms. Bureaucratization may or may not improve the delivery of

services, but always is justified ideologically on the basis of service. Finally, the theory implies that bureaucracies propagandize the quantity, quality and value of their services, while suppressing information about productive inefficiency and coercion. Weberian theory points to the fact that accurate empirical analysis of bureaucracy must counter the organization's tendency to substitute a service ideology, which conceals exploitative extraction and coercion, for actual services.

The Roman case exemplifies the importance of clarifying the meaning of bureaucratic efficiency. Roman bureaucracy's extreme efficiency¹⁵ in domination contributed to the decline of necessary, productive forces. The overriding power interest of the Roman ruling class blinded them to the most necessary rational calculations in the societal and economic realms. The extractive success of their domination structure made critical evaluation of their power moves seem unnecessary. The Roman ruling class, in utilizing bureaucratic means to realize its immediate material and symbolic interests, contributed to the eventual destruction of the Roman social system.¹⁶ Most importantly,

¹⁴ Weber understood that modern bureaucracy had achieved a higher level of productive efficiency than any other historical social formation. As an historical entity, rather than a pure type, modern bureaucracy has been characterized by vast productivity. Despite this historical reality, efficient production is *not essential* to the Weberian pure type of bureaucracy. As a pure type it is a rational structure of domination characterized by discipline and coordinated activity. These attributes make it the best known means for systematically controlling large numbers of people and *potentially* a most efficient means of organizing production. However, actualization of potential productivity depends upon the substance of the "masters' " commands and the historical factors that condition their actions in controlling the bureaucracy. Modern bureaucracy, as a historical social formation, has unleashed beneficial productive forces as well as new threats to humanity. However, these facts cannot be understood adequately purely on the basis of its formally rational organizational structure. Instead, bureaucracy has to be analyzed in relation to societal historical development. The nature, quantity and quality of modern bureaucracy's production reflect the ends of its masters, conditioned by historical circumstance. The slight confusion between domination and productive efficiency, manifested in some of Weber's historical references to modern bureaucracy, derives from his incomplete analysis of the relation of rational bureaucracy to broader western capitalist historical development and particularly to the concrete history of its class domination, not to a failure to consider adequately technical competence and professional roles, as alleged by Parsons (1964:58–60n).

¹⁵ The efficiency of Roman bureaucracy was manifested in its dual abilities in containing the social and economic crises, while at the same time maintaining the massive wealth of the ruling-class. As the productive forces of the economy declined, the bureaucracy had to intensify its extractive mechanisms and also control increased dissatisfaction of the masses. The bureaucracy's success in these areas indicates its high domination efficiency.

¹⁶ It should be stressed strongly that this paper is *not* an attempt to pose a complete theory of the Roman Empire's decline or even to present the necessary or sufficient conditions causing it. The scope of the particular problem of research required that many contributing factors (e.g., technical aspects of Roman military strategy) be excluded from consideration, and others (e.g., the loss of revenue from reduced plunder, tribute and slave influx caused by the late Empire's inability to expand or, in the final stages, even to protect its borders) be given less emphasis than they would deserve in a more totalizing theory of the Roman decline. The limited goals of this paper have been to demonstrate how bureaucratic domination might have exacerbated the Empire's crises, and also to illustrate through concrete application certain features of Weber's theory of bureaucracy. Finally, it would be difficult, and perhaps even impossible, to provide convincing evidence proving that more substantively rational bureaucratic functioning, in the later stages of the Em-

this situation was *not* the result of bureaucratic breakdown or dysfunction, but instead evolved directly from *efficient* functioning in the sphere of domination.

The contradiction of domination and production reflects a broader cultural contradiction implied by Weber. Bureaucracy can be considered a social structural objectification of formal rationality.¹⁷ The social structure and the ideological form are both characterized by an obsession with technique and a disregard for substantive ends (the ultimate values that ground behavioral routines). Bureaucratic discipline and control are means to realize ends which are taken for granted *within* bureaucratic structure. Value-rational criticism, stressing the inability of bureaucratic routines to meet community needs, runs counter to bureaucracy's "objective discharge of business" (Weber, 1968:975) and to its calculation of means according to the principle of "least effort" (Weber, 1968:65-6). Since bureaucracy is a power system, the ultimate values that govern its routines are determined outside the bureaucratic line of authority by those who control it.¹⁸ Open dialogue about these

values, among officials, would violate the power prerogatives of the bureaucratic masters. Therefore, the system works to suppress open communication even when it concerns threats that bureaucratic routines pose to community survival. This underlying contradiction between formal and substantive rationality reflects the contradictory relationship of the power holder and the ruled.

The Roman Empire cannot be equated directly with the contemporary world because it lacked the extreme rationalization of modernity. In this respect, Weber's work is a testament to the unique nature of the modern system. However, the defining attributes of this system—science, technology, technical education, rational bureaucracy and vast productivity—*do not* insure correspondence between the ends established by bureaucratic masters and the needs (and interests) of wider communities, nor does it guarantee a reduction in the contradiction of domination and production. Due to its value neutrality, formal rationality *determines nothing* in the relationship between power relations and values. Its technical products can be another weapon of the power holder and/or a means for fulfilling community needs.

Despite indisputable advances in the quantity and diversity of production, some thinkers still argue that contemporary society is characterized by "the peculiar *fusion of technology and domination*, rationality and oppression." (Habermas, 1971:85; see Marcuse, 1968:1-18). They contend that the ability of modern bureaucracy to "deliver the goods" should not be confused with social and ethical "progress." Indeed, certain scholars believe that the rise of consumerism is a phase in the advance of bureaucratic centralization, planning and administration (Marcuse, 1964; 1968; Braverman, 1974; Ewen, 1976; Noble, 1977; Mandel, 1978). These critics suggest that freedom does not unfold automatically from the polymorphous production of consumer goods, but instead relates to community control of the process of production and harmonious development of the social and physical environment. Their point is that people may have

pire, would have long delayed the system's final collapse. However, despite this qualification, I concur with Finley (1977:153, also see 146-52) who states that "it was the inflexible institutional underpinning, in the end, which failed: it could not support the perpetual strains of an empire of such magnitude within a hostile world." In short, the bureaucracy cannot be blamed for all the diverse problems of the late Empire, but it did insure that they would not be solved.

¹⁷ I do *not* mean that formally rational ideas produce the structure of bureaucracy. I rather avoid the issue of the primacy of ideas or material structure and simply stress their correspondence and interrelation in this case. Furthermore, this is consistent with Weber's position emphasizing a balanced consideration of ideas and material reality (see Weber, 1958:183).

¹⁸ Weber implies that the ultimate power controlling bureaucracy is vested in a nonbureaucratic head. Because of this position, Weber has been criticized for portraying bureaucracy as a mere organ of power transmission. On the other hand, critics suggest that bureaucracy itself can be the source of power. Some theorists, exemplifying their arguments with modern states and particularly state-socialist systems, argue that the ultimate powerholders can be the highest level of bureaucratic personnel, making the bureaucracy the source as well as the instrument of power (see Lafort, 1974-1975).

full stomachs and still be overregulated, powerless and destructive.

The issues discussed in the last paragraph are still a matter of hot debate. However, the existence of the extreme rationalization of modern society is the obvious and pervasive reality that theorists of all persuasions attempt to explain. The less intensive rationalization of the Roman system and its inability to "deliver the goods" made its domination goals relatively transparent. On the other hand, modern bureaucracy's complexity, productivity and advanced means of regulating information insure its opacity to the masses. The "educational revolution" and modern communications do not necessarily improve the layperson's understanding of the modern world. In fact, they contribute to the proliferation of "experts" and arcane technical vocabularies that transform the simplest bureaucratic routines into ponderous scientific enterprises. Indeed, it is not surprising that the "common person" often thinks that every institutional practice has "a reason" that it is "too complex" for the nonexpert to grasp. I am suggesting that rationalization, with its utopian ideology of scientific and technical progress, contributes to a further closing of the dialogue concerning formal and substantive rationality (see Habermas, 1970; Mueller, 1970). The closed communication of bureaucracy, extended to the community outside the bureaucracy, has vastly increased the information control of the bureaucratic master. As a result, the danger of confusing ideology with reality is much greater today than in simple systems, like Rome, where oppression is direct and relatively unadorned by complex legitimations in democratic dress. This is *the reason* for preserving Weberian skepticism in investigations of modern bureaucracy.

REFERENCES

- Antonio, Robert J.
1979 "The centrality of domination in Weber's concept of bureaucracy." Unpublished paper presented at the meeting of the Midwest Sociological Society.
- Barrow, R. H.
1970 *The Romans*. Middlesex: Penguin Books.
- Bendix, Reinhard
1977 *Max Weber*. Berkeley: University of California Press.
- Bernardi, Aurelio
1970 "The economic problems of the Roman Empire at the time of its decline." Pp. 16-83 in Carlo Cipolla (ed.), *The Economic Decline of Empires*. London, England: Methuen.
- Bonner, Stanley R.
1977 *Education in Ancient Rome*. Berkeley: University of California Press.
- Bowles, Samuel and Herbert Gintis
1977 *Schooling in Capitalist America*. New York: Basic Books.
- Braverman, Harry
1974 *Labor and Monopoly Capital*. New York: Monthly Review Press.
- Brunt, P. A.
1971 *Social Conflicts in the Roman Republic*. London: Chatto and Windus.
- Bruun, H. H.
1972 *Science, Values and Politics in Max Weber's Methodology*. Copenhagen: Munksgaard.
- Carcopino, Jerome
1973 *Daily Life in Ancient Rome*. New Haven: Yale University Press.
- Charlesworth, M. P.
1951 *The Roman Empire*. London: Oxford University Press.
- Cohen, Jere, Lawrence E. Hazelrigg and Whitney Pope
1975a "De-Parsonizing Weber: a critique of Parsons's interpretation of Weber's sociology." *American Sociological Review* 40:229-41.
1975b "Reply to Parsons." *American Sociological Review* 40:670-4.
- Collins, Randall
1971 "Functional and conflict theories of educational stratification." *American Sociological Review* 36:1002-19.
- Cowell F. R.
1975 *Life in Ancient Rome*. New York: Capricorn.
- Crook, John
1967 *Law and Life of Rome*. Ithaca: Cornell University Press.
- Duncan-Jones, Richard
1974 *The Economy of the Roman Empire*. Cambridge, Eng.: Cambridge University Press.
- Ewen, Stuart
1976 *Captains of Consciousness*. New York: McGraw-Hill.
- Finley, M. C.
1973 *The Ancient Economy*. London: Chatto and Windus.
1977 *Aspects of Antiquity*. New York: Penguin Books.
- Frank, Terney
1920 *An Economic History of Rome*. Baltimore: Johns Hopkins Press.
- Garlan, Yvon
1975 *War in The Ancient World*. New York: Norton.
- Gerth, H. H. and C. Wright Mills
1958 "Introduction: the man and his work."

- Pp. 3-74 in Max Weber, from Max Weber. New York: Oxford University Press.
- Gibbon, Edward
[1932] *The Decline and Fall of the Roman Empire*. Vol. 1. New York: Modern Library.
- Grant, Michael
1974 *The Army of the Caesars*. New York: Scribner's.
- 1978 *History of Rome*. New York: Scribner's.
- Habermas, Jürgen
1970 "Toward a theory of communicative competence." Pp. 115-48 in Hans Peter Dreitzel (ed.), *Recent Sociology*: No. 2. New York: MacMillan.
- 1971 *Toward a Rational Society*. Boston: Beacon Press.
- Hättich, Manfred
1967 "Der begriff des politischen bei Max Weber." *Politische Vierteljahresschrift* 8:40-50.
- Homo, Leon
1929 *Roman Political Institutions*. New York: Knopf.
- Horkheimer, Max
1974 *Critique of Instrumental Reason*. New York: Seabury Press.
- Jones, A. H. M.
1950 *Roman Government and Law*. New York: Praeger.
- 1974 *The Roman Economy*. Oxford: Basil Blackwell.
- Lefort, Claude
1974- "What is bureaucracy?" *Telos* 2:22:31-65.
- 1975
- Loane, Helen Jefferson
1938 *Industry and Commerce of The City of Rome (50 B.C.-200 A.D.)*. Baltimore: Johns Hopkins Press.
- Lopez, Robert S.
1976 *The Commercial Revolution of the Middle Ages, 950-1350*. New York: Cambridge University Press.
- Luttwak, Edward
1976 *The Grand Strategy of the Roman Empire*. Baltimore: Johns Hopkins University Press.
- McEvedy, Colin
1967a *The Penguin Atlas of Ancient History*. Middlesex: Penguin.
- 1967b *The Penguin Atlas of Medieval History*. Middlesex: Penguin.
- MacMullen, Ramsay
1966 *Enemies of the Roman Order*. Cambridge, Ma.: Harvard University Press.
- 1974 *Roman Social Relations*. New Haven: Yale University Press.
- Mandel, Ernest
1978 *Late Capitalism*. London: Verso.
- Marcuse, Herbert
1964 *One Dimensional Man*. Boston: Beacon Press.
- 1968 *Negations*. Boston: Beacon Press.
- Mattingly, H.
1910 *The Imperial Civil Service of Rome*. London: Cambridge University Press.
- Mommsem, Theodor
1958 *The History of Rome*. New York: World Publishing.
- Mueller, Claus
1970 "Notes on the repression of communicative behavior." Pp. 101-13 in Hans Peter Dreitzel (ed.), *Recent Sociology*: No. 2. New York: MacMillan.
- Mumford, Lewis
1961 *The City in History*. New York: Harcourt, Brace and World.
- Noble, David
1977 *America by Design: Science, Technology, and the Rise of Corporate Capitalism*. New York: Knopf.
- Parsons, Talcott
1960a "Review article: 'Max Weber.'" *American Sociological Review* 25:750-2.
- 1960b *Structure and Process in Modern Societies*. Glencoe: Free Press.
- 1964 "Introduction." Pp. 3-86 in Max Weber, *The Theory of Social and Economic Organization*. New York: Free Press.
- 1972 "Review of 'scholarship and partisanship: essays on Max Weber.'" *Contemporary Sociology* 1:200-3.
- 1975 "Response to 'De-Parsonizing Weber,'" *American Sociological Review* 40:666-9.
- Pirenne, Henri
1969 *Medieval Cities*. Princeton: Princeton University Press.
- Rostovtzeff, M.
1926 *Social and Economic History of The Roman Empire*. Oxford: Clarendon Press.
- Roth, Guenther
1965 "Political critiques of Max Weber." *American Sociological Review* 30:213-23.
- Schulz, Fritz
1946 *History of Roman Legal Science*. Oxford: Clarendon Press.
- Stevenson, G. H.
1939 *Roman Provincial Administration*. Oxford: Basil Blackwell.
- Walbank, F. W.
1969 *The Awful Revolution*. Liverpool: Liverpool University Press.
- Weber, Max
1950 "The social causes for the decay of ancient civilization." *The Journal of General Education* 5:75-88.
- 1958 *The Protestant Ethic and The Spirit of Capitalism*. New York: Scribner's.
- 1968 *Economy and Society*. 3 vols. New York: Bedminster Press.
- 1976 *The Agrarian Sociology of Ancient Civilizations*. London: New Left Books.
- Wheeler, Sir Mortimer
1954 *Rome Beyond The Imperial Frontiers*. London: G. Bell.

INEQUALITY AND POLICE STRENGTH: CONFLICT THEORY AND COERCIVE CONTROL IN METROPOLITAN AREAS*

DAVID JACOBS

University of Maryland Baltimore County

American Sociological Review 1979, Vol. 44 (December):913-925

Conflict theorists have frequently argued that differences in economic resources give elites the ability to control the coercive apparatus of the state. Pronounced economic differences also provide elites with a strong need to maintain order so that ongoing relationships will not be disturbed. Because a strong police force is the most direct way to maintain order, one logical implication of conflict theory is that law enforcement personnel should be most numerous in metropolitan areas where differences in economic resources are greatest. Cross-sectional analyses of large SMSAs in 1960 did not always support this hypothesis. But when data from 1970 were analyzed the results invariably showed that unequal metropolitan areas were likely to have more police and other law enforcement personnel.

Although it has often been debated, the connection between the economic power of elites and the coercive apparatus of the state remains an unresolved issue in sociology. Close attention to this problem is not surprising since hypotheses about this fundamental relationship are a major component of both the radical and conservative images of society. If societies are held together by force for the benefit of those who have more, than one can expect that those charged with creating and enforcing the law will be especially responsive to the wishes of the highest class. But if social order is based on democratic consensus, then other more numerous classes should be at least as influential.

These themes have been diligently pursued in the literature on stratification and political sociology (cf. Weber, 1968; Lenski, 1966; Collins, 1975). Recently, with the emergence of the conflict perspective on the legal order, those who study crime have also been drawn into this perennial debate. Because of this recent innovation a subdiscipline that was once

isolated from the theoretical core of sociology (Taylor et al., 1973; Turk, 1969) may now shed new light on fundamental questions about the nature of society.

This possibility exists because of the questions that are being raised by conflict theorists. Instead of seeing the law as impartially administered for the benefit of the majority, conflict theorists maintain that the control of crime and deviance proceeds in accord with the wishes of those with power who use this control to further their own narrow interests. It follows that research which addresses this issue must focus on perennial sociological disputes about the correct image of society.

My intent is to see if a hypothesis derived from the conflict model of the legal order can be used to predict one outcome that is in the interest of economic elites. The exact question I seek to answer by use of quantitative techniques is whether differences in economic power lead to stronger agencies which specialize in coercive control.

The Literature

The initial work on social control which used power as an explanatory device was eclectic in its treatment of resources. For example, Dickson (1968) and Duster (1970) wrote about the bureaucratic imperatives and resources which shaped the administration of the drug codes. Gusfield (1963) and Platt (1969) emphasized a variety of middle class interests while Roby

* Address all communications to: David Jacobs; Department of Sociology; University of Maryland Baltimore County; 5401 Wilkens Avenue, Baltimore, MD 21228.

I wish to thank David Britt, Byron Matthews, Leo Rigsby and Allan Schnaiberg for their helpful comments on an earlier draft. Mary Pat Tucker should be thanked for her expert typing. Computer time for this project was supported in part through the facilities of the Computer Science Center of the University of Maryland.

(1969) argued that a pluralistic combination of many interest groups determined how prostitution was to be regulated in New York.

This work was very useful because it demonstrated that law did not emerge from consensus. But the findings do not seem to cumulate. With such conclusions in mind, the only thing that can be said about the relationship between social organization and social control is that a circulation of interests based on a variety of resources shapes the legal order (Taylor et al., 1973). A summary of these results does not answer more fundamental questions about the exact social conditions which give particular groups the ability to control the law and its administration.

Recent theoretical work has stressed economic power as the basis for control over the legal order (Chambliss and Seidman, 1971; Chambliss, 1976; Quinney, 1974; 1975; Taylor et al., 1973). For example, Chambliss writes that "middle class organizations are for the most part unable to combat or counteract the forces of classes who control the economic resources of society" (1976:92). Instead, "The dominant economic class through its use of the legal system is able to preserve a domestic order that allows its interests to be maintained and promoted" (Quinney, 1974:21). Historical studies by Chambliss (1964) and Graham (1972) and quantitative analyses by Jacobs (1978) and Jacobs and Britt (1979) support this contemporary emphasis on economic resources and economic power.

Towards an Operational Hypothesis

This emphasis can be used to develop a test of conflict theory that is similar to the operationalization used by Jacobs (1978). If the possession of money almost automatically confers power in western societies (Blalock, 1967), then an unequal distribution of this crucial resource should lead to outcomes preferred by the rich. Power is a relational concept involving comparative differences in resources. Therefore, when economic resources are distributed more unequally, economic elites will have the greatest capacity to achieve their aims. It follows that *the*

more there are inequalities in the distribution of economic power and economic resources, the more one can expect that the social control apparatus of the state will conform to the preferences of monied elites.

Thus, if the economic emphasis in conflict theory has merit then differences in economic resources will give elites the ability to control the legal order.¹ Economic inequality also makes this control a necessity. According to Chambliss and Seidman (1971:33)

the more economically stratified a society becomes the more it becomes necessary for dominant groups in society to enforce through coercion the norms of conduct which guarantee their supremacy.

This argument can be applied to modern societies by noting that conflicts between the haves and have-nots occur within a social organization where state violence can be called out or appealed to as a threat (Collins, 1975). In societies where production is organized by markets, an ability to call out this threat should be vital for elites. This is so because the differences in rewards that result from unbalanced exchange make it likely that at least some members of the more numerous dependent classes will attempt to use force in order to overcome their subordinate position (Blau, 1964). It follows that the dominant economic class "constantly sponsors . . . legislation that will help to achieve stability so that ongoing relationships can be sustained" (Chambliss, 1976:76).

In this society the major institution responsible for the coercive maintenance of stability and order is the police. This point is supported by Bittner (1975) when he says that even when the police are selected for noncriminal tasks it is because they are specialists in the use of

¹ For additional evidence that this formulation is consistent with conflict theory, consider the statement by Chambliss (1976:100) that "Only secondarily and then only in minor ways does the criminal law reflect the value consensus, the public interest or the shifting and weighing of competitive interests. A model more consistent with the realities of legal change must take into account differences of power which stem largely from differences in control over economic resources of the society."

coercive force. Thus, because conflict theory predicts that economic differences provide elites with both the ability to control coercive institutions and the need to maintain order, there should be a close, positive relationship between economic inequality and the number of police in metropolitan areas.

The Police and the Protection of Elites

There are less theoretical reasons for believing that economic elites have a vital interest in a strong police force. According to Silver (1966), the police were initially developed in order to protect the "peace loving propertied classes" from the poor. In times before the police, public order had been maintained by either the army or an irregular force of rural property owners called the yeomanry. Neither arrangement was satisfactory. The yeomanry was both prone to overreact—a favorite tactic was the cavalry charge—and often perceived as the instrument of the upper classes. Use of the army involved an even more dichotomous control system because this force was expensive to maintain and just as ill-adapted to meet day-to-day needs for intermediate measures.

The police represented an effort to overcome these disadvantages. This organization was designed to penetrate civil society in a way that was impossible for the military. Such a specialized force could begin to prevent crime and control the "dangerous classes" on a daily basis. Thus, economic elites created a "... bureaucratic police system that insulated them from popular violence, drew attack upon itself, and seemed to separate the assertion of 'constitutional authority' from that of social and economic dominance." Silver and Parks (1970:11-2) argue that the contemporary police have similar uses.

Other facts support the argument that a strong police force benefits elites more than other classes. In general, it can be said that the modern police force is a reactive agency with a limited capacity to detect or prevent the many illegal activities which are comparatively inconspicuous (Reiss and Bordua, 1966; Reiss, 1971;

Wilson, 1971; Rubenstein, 1973). The police have infrequent access to private areas (Stinchcombe, 1963). In addition, the ratio of policemen to possible offenders is infinitesimal.

These factors make the discovery of illegal behavior or its intent very difficult because the available procedures allow only the most gross assessments about deportment. For example, the policeman in charge of an area can make decisions about who should be stopped and investigated only on the basis of clearly apparent anomalies in a suspect's behavior (Rubenstein, 1973). These simple cues are much too crude to interfere with the activities of most lawbreakers and this means that the police are ineffective unless criminal intent is obvious. It follows that when a crime is reported, a policeman has only a few minutes to make an arrest. After these few minutes most suspects become invisible in any large city (Rubenstein, 1973).

One result of these circumstances is that conventional street crime is difficult to control in low income sections of the city where the street criminal and innocent bystanders frequently share many characteristics (Rubenstein, 1973; Wilson, 1971). But if policemen are numerous, their reliance on "that which is out of place" (Rubenstein, 1973) should be more effective when the residents of affluent neighborhoods must be protected from street criminals whose lower status is often quite visible.² In addition, riots which begin in low income areas can be confined to those sections of the city by a strong police force. It follows that even if we ignore the real possibility that the police are most responsive to demands for security by the affluent, it is still likely that a strong police force is better able to protect these citizens.³

² Note however that the converse does not occur. Since the police only control the streets (Rubenstein, 1973) even the most effective department cannot protect less affluent citizens from white-collar crimes that are often committed by the rich.

³ These facts partially explain why the poor are generally the most frequent victims of crime and riots. It follows that the police often concentrate their forces in low income areas to make attempts to alleviate these problems. However, this concentration will still benefit elites if redistributive violence is

This differential in effectiveness implies that if the police become unexpectedly deactivated in any large city, the rich and powerful have much to fear. Several case histories of police strikes support this assertion. In 1919, fifteen hundred officers struck the city of Boston and left just one hundred and fifty men on duty (White, 1965). After a tentative period of incremental violations in low income sections, large crowds began to loot expensive stores in the downtown area. By the time order was restored, more than one million dollars in property damages had resulted (Ziskand, 1940). But this strike was not a complete surprise since many business establishments and wealthy home owners were able to hire private guards and avoid serious damages (*New York Times*, Sept. 11, 1919).

Clark's (1975) account of the recent Montreal strike is more instructive because there was no time to hire additional protection. In 1969, almost all of this normally peaceful city's thirty-eight hundred police unexpectedly walked out and left 200 Canadian state police to maintain order. Again, after apparently starting in poorer sections, violations spread to other districts. The number of bank robberies rapidly increased. After the banks closed, many expensive jewelry stores were robbed and after these closed, calls began to come in from food and drug stores. Citizens in affluent neighborhoods also suffered. Later in the same evening, crowds began looting in the downtown area leaving 156 establishments with smashed windows and empty display cases. The three most expensive department stores were heavily damaged.

Powerful elites were victimized in additional ways. Two hundred independent taxi drivers used fire bombs to mount an effective attack on the company which held an exclusive franchise on service to the airport. The mayor's luxurious restaurant was deliberately sacked along with several of the more expensive hotels. Other symbols of English domination in

this ethnically divided province were also singled out for special attention.

At a minimum, these case histories imply that descriptions of the uses of the first police force (Silver, 1966; Parks, 1970) have contemporary merit since the inverse relationship between class and victimization no longer seems to hold when the police become unexpectedly deactivated.⁴ This evidence also supports theoretical arguments that differences between the resources of elites and other groups give elites a vital interest in a strong police force. Thus, if it is the case that the coercive apparatus of the state is controlled by those with economic power, then we can expect that the most unequal metropolitan areas will have the greatest number of police and other law enforcement personnel.

METHOD

Difficulties with Previous Studies

Several researches have looked at the statistical relationship between inequality and police strength but these studies have serious flaws. No theoretical justification was attempted and both analyses used inappropriate units. Dye (1969) looked at data collected from states in 1960 and found no relation between a Gini index computed from personal incomes and police per capita. But there is good reason to believe that any connection between economic inequality and police strength would occur only in large metropolitan areas where informal controls are lacking (Jacobs, 1978; Price, 1966). Because states are heterogeneous units which include rural districts and small towns and since a simple mathematical check of

most likely to emanate from these areas. Subsequent examples will show that this is a reasonable assumption.

⁴ It is not necessary to argue that all police strikes have led to the increased victimization of the affluent. For a variety of reasons, criminal violence did not expand in many cities when the police struck. Either the strike was predictable so that substitute officers could be temporarily used or only a limited number of officers participated or some other idiosyncratic event prevented an increase in violations of all kinds (Bopp, 1971; Ziskand, 1940).

The important point for this analysis is that when these temporary restraints were insufficient and the strikes did result in more violations, a much greater proportion of these crimes was directed at elites.

Dye's results reveals anomalies, his findings should be reinvestigated.⁵

Foley (1977), on the other hand, used 300 counties in the northeastern United States and found less consistent results. In this study of the correlation between a Gini index computed on family incomes and expenditures for police was negligible for all counties but when Foley looked at 55 counties within northeastern standard metropolitan areas the zero-order correlation rose to .69. However, limited statistical controls on the percentage of non-whites and median family incomes caused considerable attenuation in the partial correlation.

In any event, an investigation of the effects of economic inequality should not use counties. Consider a relatively poor city surrounded by affluent suburban counties. As long as the measurement of inequality is confined to these fairly homogeneous units, each county will appear to be equal, but if all contiguous counties in this metropolitan area are combined their inequality score will rise dramatically. Counties (and cities) are artificial units in other ways. Affluent suburban residents often have economic interests and considerable political influence in adjacent cities (Banfield and Wilson, 1963; Dahl, 1961). Because violators can also cross city boundaries, elite influence may be used to insure that cities maintain a strong police force as a first line of defense between low income areas and the affluent suburbs. It follows that both inequality and the number of law enforcement personnel should be measured using large standard metropolitan statistical areas because the interactions that concern us are *not* restricted to cities.⁶ In any event, this

methodological decision does not have much effect on the conclusions since an analysis that uses cities and less valid inequality scores gives results that are almost as strong as those found by using SMSAs.

Design and Operationalization

In this study, I used a cross-sectional analysis of all SMSAs with a population greater than 250,000 in 1960 and 1970. Economic inequality was measured with standard deviations computed from data on family incomes taken from the census enumeration of incomes in metropolitan areas (see Blalock 1972:87 for the formula to compute *S* from grouped data). This measure of inequality has particular advantages for a study of elites because it is sensitive to income differences created by the presence of high income recipients. Income distributions are skewed so a measure that is based on squared deviations from the mean will be most affected by the largest incomes although the distribution of all other incomes will still contribute to variation in *S* (Alker and Russett, 1966. For precedent in the use of this measure of economic inequality see Jencks et al., 1972 and Chiswick and Mincer, 1972). Note also that by definition inequality is a relational characteristic rather than an individual one. When inequality is measured income receiving units must be compared. This means that an attempt to examine the connection between inequality and police strength must use ecological aggregates as the unit of analysis.

I measured police strength with census statistics on the number of police and detectives per 100,000 population who were employed by local governments and with the number of police, detectives, sheriffs, bailiffs, marshals, and constables per 100,000 population employed by municipal governments. This second dependent variable is worth examination because many localities use these different occupational groups for the same purposes.

⁵ Dye implies that his coefficients are beta weights because he makes comparisons of the predictive strength of different variables within equations. However, something is amiss because it must be that in any regression equation where the results are given in beta weights the sum of the products of each beta weight and each independent variable's correlation with the dependent variable must equal the R^2 (Walker and Lev, 1953:322). Application of this formula to Dye's results indicates that either he reports unstandardized coefficients and then erroneously compares them or there was an error in his calculations.

⁶ It is common for larger municipalities to sell police services to adjacent local governments (Os-

trum et al., n.d.). It follows that the use of cities rather than SMSAs would also result in artificially inflated totals since some police manpower is not used within these cities.

Alternative explanations for variation in police strength were operationalized as follows. Metropolitan areas with many blacks may have more policemen because the presence of this disprivileged minority leads to fears of crime and riots. This variable was measured with census statistics on the percentage of blacks in an area. Metropolitan areas may also have more police if they had direct experience with riots. This variable was operationalized by aggregating Spilerman's (1970; 1971; 1976) data on the number of riots in cities between 1961 and 1969 to create a total score for each SMSA. Because joblessness may contribute to crime and disorders, metropolitan areas with a higher percentage of unemployed workers may have stronger police departments. This variable was measured with census statistics on unemployment.

Relatively affluent metropolitan areas can afford more police protection. The best measure of resource level is mean family incomes but this indicator has substantial intercorrelations with other independent variables. One solution is to substitute median family incomes for mean incomes and report these additional results. This means that I will report two sets of equations. One set will be less complete but the intercorrelations between independent variables will be reasonable. In the other set, the most optimal measures will be used but higher intercorrelations will be present.

Areas with more crime should have more policemen. But the use of F.B.I. statistics on crimes known to the police as an independent variable is not consistent with ordinary least-squares assumptions about reciprocal causation and measurement error. These rates are widely acknowledged as unreliable. In addition, they are often manipulated for bureaucratic ends (Kitsuse and Cicourel, 1963). Sophisticated police administrators can increase their budgets with inflated statistics so a component of the relationship between the crime rates and police per capita may be the result of systematic exaggerations which result in more law enforcement personnel. Since there is no way to estimate the size of these distortions and because the number of crimes in

an area should be an important determinant of police strength, I will also report additional analyses which include this independent variable.

Owners of small retail establishments have a natural interest in a strong police force. Their losses from crime are disproportionately high (Reiss, 1969) so one common reaction is to make frequent requests for continuous surveillance (Rubenstein, 1973). The most effective measure of this concept was the number of drugstores and liquor stores per 100,000 residents taken from the census of business.⁷

There is evidence that social control is more difficult in populous communities (Jacobs, 1978; Price, 1966). Thus, larger communities may find that they must employ more policemen. I used the log of an SMSA's population to measure this effect. This measure has strong correlations with other indicators so it was used only in the second set of equations with substantial intercorrelations between the independent variables. Finally, because social relationships are often held to be qualitatively different in the southern region of the country, I also entered a dummy coded one if the majority of an SMSA's population was in one of the eleven southern states.⁸

It follows that four equations will be used to estimate each dependent variable in 1960 and 1970. Two equations will use the crime rates but that variable will be excluded from the other set. Two equations will be restricted to independent variables with reasonable intercorrelations while the other two will employ the most optimal measures but the intercorrelations between independent variables will be substantial.

ANALYSIS

Multivariate Analysis

Table 1 shows the intercorrelations

⁷ In fact, no other reasonable combination of the categories of retail activity contained in the census of business was an effective predictor of the amount of law enforcement personnel.

⁸ States classified as southern were Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

Table 1. Product Moment Correlations between the Independent Variables and Measures of Police Strength (Relationships below the Diagonal Are Computed from 1970 Data While Those above the Diagonal Are Computed from 1960 Statistics. The Number of Cases Is 121 and 96.^a)

	1	2	3	4	5	6	7	8	9	10	11	\bar{X}	S
1. Economic Inequality (S)	1.000	.711	.594	.217	.465	-.041	.436	.578	-.486	.581	.597	4862	398
2. Mean Family Income	.773	1.000	.984	-.246	.379	-.569	.017	.505	-.353	.485	.473	7034	815
3. Median Family Income	.607	.968	1.000	-.313	.324	-.637	-.062	.449	-.284	.410	.398	6089	727
4. %Black	.149	-.201	-.234	1.000	.075	.692	.336	.139	-.220	.174	.179	9.91	8.96
5. Drug and Liquor Stores	-.193	.029	.075	-.358	1.000	-.148	.223	.806	-.048	.579	.581	50.6	89.1
6. South	-.039	-.481	-.581	.661	-.410	1.000	.371	-.140	-.140	-.110	-.096	.240	.429
7. Crime Rates ^a	.495	.247	.162	.208	-.306	.107	1.000	.267	-.163	.228	.288	1057	421
8. Population (in log form)	.624	.541	.475	.162	.064	-.157	.443	1.000	-.107	.588	.586	5.788	.3592
9. % Unemployed	-.143	-.086	-.040	-.321	.166	-.300	.222	.008	1.000	-.212	-.177	5.11	1.57
10. Police and Detectives ^b	.631	.542	.451	.162	.223	-.110	.413	.603	-.096	1.000	.982	127.2	44.63
11. All Law Enforcement Officers ^b	.618	.495	.406	.173	.172	-.082	.487	.580	.025	.966	1.000	141.9	43.73
12. Riots	.479	.407	.344	.224	.067	.067	.255	.719	-.069	.471	.438	2.463	3.66
\bar{X}	8842	11415	10071	10.7	70.0	.265	2669	5.806	3.78	2.096	2.158		
S	844	1312	1213	9.1	30.2	.443	996	.3573	1.39	.140	.127		

^a Correlations on the 1960 data for the crime rates are based on 91 cases rather than 96.

^b To correct for positive skew the dependent variables in 1970 are logged to the base 10.

between all variables in both 1960 and 1970. Note that the four correlations between economic inequality and measures of police strength are quite strong although other independent variables had equivalent relationships with the 1960 dependent variables.

Table 2 shows the results of multiple regressions computed on the 1960 data. Beta weights for the number of retail establishments vulnerable to crime were always significant but the coefficients for inequality were only significant in five of the eight equations.⁹ It follows that metropolitan areas with a disproportionate number of drug and liquor stores were most likely to have more police. In addition, it is probable that unequal SMSAs were also likely to have stronger law enforcement agencies although this effect was less robust in the face of collinearity.

This was not the case when the 1970 data were analyzed. Regardless of the controls that were introduced, the results in Table 3 show that economic inequality always had significant effects. Beta weights for the number of drug and liquor stores per capita were also comparatively strong. The percentage of blacks, however, had less substantial effects although they were significant in all equations. Finally, it is interesting that even though the number of riots in a metropolitan area had moderately strong zero-order correlations with the number of police and law enforcement personnel, this variable was ineffective when other relevant factors were controlled.¹⁰

⁹ Tests of significance are useful when the data are taken from an entire universe instead of a sample. As Nambodiri et al. (1975:10) and Blalock (1972:238-9) point out, when such tests are applied to data from populations the observed distribution is compared with a random process. In other words the observed distribution is treated as randomly sampled from a population of all possible, indefinitely repeated experiments.

¹⁰ It has been argued that the use of ratios as indicators may lead to faulty estimates if the same term appears in two variables. For example, the correlation between two ratios with population in each denominator may be artificially high (Schuessler, 1974). Note, however, that the inequality measure does not share terms with the dependent variables. In addition, when the analysis is confined to independent variables with moderate intercorrelations, the index of inequality does not share terms with any

Table 2. Multiple Regression Analyses of Police Strength in 1960 (Reported Coefficients Are Beta Weights. N = 96*)

	Police and Detectives Per Capita				All Law Enforcement Personnel Per Capita			
	Moderate Intercorrelations		Substantial Intercorrelations		Moderate Intercorrelations		Substantial Intercorrelations	
Ec. Inequality (S)	.309*	.340*	.228	.263	.383**	.373*	.324*	.312
Resource Level ^b	.097	.064	.177	.122	.072	.065	.129	.121
% Black	.185	.222	.183	.215	.168	.204	.167	.203
% Unemployed	.010	.031	.016	.030	.071	.090	.076	.092
Drug & Liquor Sts.	.375**	.386**	.326*	.322*	.357**	.358**	.324*	.325*
South	-.106	-.135	-.066	-.101	-.088	-.130	-.059	-.103
Crime Rates*		-.021		-.015		.044		.050
Log Population			.072	.097			.050	.048
R ²	.478	.509	.485	.515	.491	.520	.494	.523

Significance Levels * .05 level ** .01 level.

* Equations which include the crime rates are computed on 91 cases. Five SMSAs had to be dropped because of differences in the enumerated areas.

^b In equations with moderate intercorrelations between independent variables resource level was measured with median family income. This concept was measured with mean family income in the other equations.

These results can be summarized by noting that unequal SMSAs probably had more law enforcement personnel in 1960 but the relationships were much stronger and more consistent in 1970. It follows that the 1960 results offer some support for conflict theory while the coefficients computed from 1970 data provide good evidence that differences in economic resources lead to more public employees who specialize in coercive control.¹¹

variable. But other independent variables do use population in their denominator. To control for this effect, if an independent variable had population in its denominator in the previous analyses, its numerator was regressed on population and the residual from this equation was substituted for the original independent variable. This strategy removes all shared terms. The coefficients found with it are equivalent to those reported in Tables 2 and 3. Beta weights for inequality continue to be substantial.

¹¹ Other measures of inequality and racial subordination had little effect on the dependent variables. Coefficients for indicators sensitive to racial inequality like the ratio of black to white median family incomes or the percentage of black families below the poverty line were insignificant. Alternative measures of economic inequality that were less sensitive to the presence of high income families like the Gini index or the percentage of all families below the poverty line also had negligible effects. In addition, no relationship between the dependent variables and various measures of density or the percentage change in population could be found. Finally, there was no discernible tendency to pay lower wages so that more policemen could be hired since the correlation between median police salaries and police per capita was positive ($r = .46$). Even when the comparative wages in an area were loosely con-

Additional Evidence

Other competing explanations for the results can also be eliminated. First, the evidence does not support a hypothesis that economic inequality has effects on police strength because of the activities of less affluent income recipients. If the percentage of families in each income category used by the census is correlated with the dependent variables, the relationships are weak for all but the two highest categories in both years. For example, in 1960 the percentage of families with incomes between \$15,000 and \$25,000 and those with incomes above \$25,000 were correlated with police per capita at .57 and .53, respectively. In 1970 the two highest categories were \$25,000 to \$50,000 and \$50,000 plus but the correlations were almost identical at .57 and .52. Because correlations for other income groups never get above .42 and since there is a consistent downward trend as incomes diminish, it is evident that in areas where middle and low income families are most numerous there is no tendency to hire additional police.

Note, however, that these high income variables cannot be used as substitutes for the measure of total inequality. Problems with severe collinearity between the per-

trolled by dividing median police wages by all median incomes the correlation between police per capita and this ratio was still weakly positive at .13.

Table 3. Multiple Regression Analyses of Police Strength in 1970 (Reported Coefficients Are Beta Weights. N = 121)

	Police and Detectives Per Capita ^a				All Law Enforcement Personnel Per Capita ^a			
	Moderate Intercorrelations		Substantial Intercorrelations		Moderate Intercorrelations		Substantial Intercorrelations	
Ec. Inequality (S)	.567**	.413**	.475**	.337*	.584**	.411**	.520**	.360*
Resource Level ^b	.114	.142	.086	.152	.094	.126	.042	.118
% Black	.238*	.203*	.232*	.206	.258**	.218*	.251*	.221*
% Unemployed	.005	-.106	-.020	-.108	.147*	.022	.121	.019
Drug & Liquor Sts.	.402**	.464**	.377**	.441**	.351**	.420**	.326**	.401**
Riots	.080	.065	-.037	-.004	.058	.040	-.052	-.013
South	-.002	-.009	-.027	-.019	.020	.012	-.011	-.005
Crime Rates		.294*		.268**		.330**		.309**
Log Population		.227*		.135		.213*		.107
R ²	.575	.624	.592	.630	.531	.593	.546	.596

Significance Levels * .05 level ** .01 level.

^a To correct for positive skew both dependent variables are logged to the base 10.^b In equations with moderate intercorrelations between independent variables resource level was measured with median family income. This concept was measured with mean family income in the other equations.

centage of high income families and other important independent variables often make it impossible to enter these measures in an equation. When these variables can be used the measure of total inequality is more effective but this result is predictable. Recall that the inequality variable always had stronger zero-order relationships with the dependent variables. Thus, it appears that a variable which measures *differences* in economic power is more useful in this study than one that measures only the presence of high income recipients.

Another possibility is that economic inequality heightens the power of elites, but since this group has a greater sense of civic responsibility, unequal areas will have more public services of all kinds. The available evidence also makes this hypothesis difficult to believe. For example, the correlation between inequality and local government health workers per capita is -.03 while the relationship between inequality and the number of social and recreational workers per 100,000 residents is .19. In addition, there is no relationship between inequality and the proportion of families below the poverty line who were recipients of public assistance.

But there is a more comprehensive way to evaluate this hypothesis. If inequality has a positive correlation with the percentage of *all* local government employees who specialize in law enforcement then

unequal areas must have fewer public employees providing other services. This correlation is .53 for both the percentage of policemen and the percentage of all law enforcement personnel and these relationships continue to be substantial when statistical controls are introduced. Thus, where differences in economic resources and economic power are greatest, there will be more law enforcement personnel hired at the expense of other public service workers.

DISCUSSION AND CONCLUSIONS

Research described by Wilson (1975) shows that saturating an area with more police has no effect on either the crime rates or crimes cleared by arrest. If methodological problems with crimes known to the police and other difficulties are ignored, these findings imply that beyond some threshold level it is irrational to demand more police. But this research says nothing about the minimal number of police that are necessary to control unpredictable events like riots. In any event, the notion of rationality assumes that information is complete (Simon, 1959). But when there is considerable uncertainty about the exact point where additional policemen are no longer worth their additional cost it may be wise to err in the positive direction. Thus, inevitable imperfections in knowledge mean that de-

mands for more police may be quite rational for some groups.

One reason for this is purely economic. Local taxes are highly regressive with respect to income (Netzer, 1973; Shannon, 1973) so the affluent have less to lose from local expenditures for public services. It follows that any private costs for protection which can be shifted to local governments will be borne largely by other classes. Furthermore, because elites must contribute a comparatively small amount of their income for additional law enforcement personnel, a strong police force not only helps to preserve their position but also costs them less.

On a more general level it can be said that pluralists have consistently deemphasized the importance of economic cleavages as a determinant of political and legal outcomes. But perhaps this burial was premature. Certainly those results show that at least one important local outcome is heavily influenced by differences in economic resources. A good part of this disagreement can probably be attributed to differences in methodology. When they study political outcomes, pluralists have generally relied on the direct observation of interest groups and their effects. But the political activities of elites will often be disguised and inaccessible to an outside observer. Observational techniques also mean that the researcher becomes preoccupied with the details of a few decisions without being able to generalize about outcomes in a large number of political units. It follows that this method may not be the best way to see if economic cleavages are important.

It should also be emphasized that elites are not the only beneficiaries of expanded police services. Large segments of the poor also gain although it is unlikely that this group benefits as much as elites.¹² It follows that the use of those results to contradict pluralistic theories of local power violates an implicit assumption that is a fundamental element of that perspective. In order to make their picture of

community power credible, pluralists invariably stress issues that involve a fixed sum relationship between interest groups so that one group's gain requires equivalent losses by other groups. But this imagery does not fit many issues because losses and gains are neither equivalent nor inversely related. In this specific instance, many groups voice demands for more police but the evidence suggests that departments will be strongest only when conditions give influence to economic elites and a few retail store owners.

Thus, a finding that pronounced economic cleavages lead to more policemen not only supports conflict theories of the legal order but it also substantiates claims made by critics of pluralism. Now instead of relying on the reputational or positional approaches and arguments about the insensitivity of observational methods, those who are skeptical of the pluralistic model of local power have some quantitative evidence that differences in economic resources are a significant determinant of one important local outcome.

Finally, the coefficients also indicate that the police tend to be strongest in metropolitan areas where there are many stores that sell either drugs or liquor. Because no relationship between the number of law enforcement officers and other kinds of retail activities could be found, this consistent result implies that only a few store owners are successful when they demand more police protection. Thus, it appears that two factors contribute to stronger police departments. Metropolitan areas will have more policemen when differences in economic resources allow elites to exercise more influence and when there are many potentially vulnerable retail outlets for narcotics and alcohol.

Summary and Conclusions

Conflict theorists have often argued that legal institutions are subject to the preferences of economic elites who use this control to maintain their ascendant position. One logical implication of this view is that an unequal distribution of economic resources will give elites both the ability to control the coercive apparatus of the state and a vital need to maintain order so

¹² This is particularly the case since the provision of additional police officers comes at the expense of other public services.

that ongoing relationships can be sustained.

The most direct way to maintain order is with a strong police force. Therefore, it was hypothesized that law enforcement personnel would be most numerous in metropolitan areas where an unequal distribution of resources favored influence attempts by the affluent.

The analysis of large SMSAs in 1960 provided moderate support for this hypothesis since regression coefficients for inequality were significant in five out of eight equations. But when data from large SMSAs in 1970 were analyzed, the results always confirmed this prediction since inequality was significant in all eight equations. Note however that the coefficients cannot be used to eliminate an additional explanation for the strength of law enforcement agencies since areas with many drug and liquor stores also had more policemen in both years.

Another aspect of the results is instructive. Metropolitan areas with more blacks had stronger law enforcement agencies in 1970 but this effect was not present in the 1960 equations. Thus, economic and racial cleavages were better predictors of police strength after a decade of well publicized social upheavals which may have been threatening to elites. Finally, an additional analysis showed that unequal metropolitan areas had fewer public workers in fields other than law enforcement. Therefore, in areas where differences in resources favor the affluent, one can expect that more resources will be spent on coercive control but this will be at the expense of other public services.

It follows that these results and those found by Jacobs (1978) and Jacobs and Britt (1979) provide quantitative evidence that conflict theory can be used to predict the behavior of institutions that specialized in social control. This study also provides a bridge between conflict theories in criminology and more general theories of stratification. In particular, the results are consistent with Weber's (1968) contention that those with a dominant position in market exchanges will always seek state protection from redistributive violence. Thus, where production is organized by markets, coercion may no

longer be used as a direct cause of inequality as it was in premarket societies (Lenski, 1966). Instead, it is more likely that the government's monopoly of coercive violence is kept in reserve to ensure that asymmetrical exchange relationships will not be disturbed. This study shows that this reserve is stronger when economic differences between elites and nonelites are greatest.

REFERENCES

- Alker, H. and Bruce Russett
1966 "Indexes for comparing inequality." Pp. 39-48 in B. Meritt and S. Rokkan (eds.), *Comparing Nations*. New Haven: Yale University Press.
- Banfield, Edward C. and James Q. Wilson
1963 *City Politics*. New York: Vintage Books.
- Bittner, Egon
1975 *The Functions of the Police in Modern Society*. New York: Aronson.
- Blalock, Hubert M.
1967 *Toward a Theory of Minority Group Relations*. New York: Capricorn Books.
1972 *Social Statistics*. New York: McGraw-Hill.
- Blau, Peter
1964 *Exchange and Power in Social Life*. New York: Wiley.
- Bopp, William J.
1971 *The Police Rebellion*. Springfield, Ill.: Charles C. Thomas.
- Chambliss, William J.
1964 "A sociological analysis of the law of vagrancy." *Social Problems* 12:67-77.
1976 "The state and criminal law." Pp. 66-106 in William Chambliss and Milton Mankoff (eds.), *Whose Law What Order*. New York: Wiley.
- Chambliss, W. J. and R. Seidman
1971 *Law, Order and Power*. Reading: Addison-Wesley.
- Chiswick, Barry and Jacob Mincer
1972 "Time series changes in personal income inequality in the United States with projections to 1985." *Journal of Political Economy* 80:534-71.
- Clark, Gerald
1975 "What happens when the police strike." Pp. 440-91 in William Chambliss (ed.), *Criminal Law in Action*. Santa Barbara: Hamilton.
- Collins, Randall
1975 *Conflict Sociology*. New York: Academic Press.
- Dahl, Robert A.
1961 *Who Governs?* New Haven: Yale University Press.
- Dickson, Donald
1968 "Bureaucracy and morality: an organizational perspective on a moral crusade." *Social Problems* 16:146-56.

- Duster, Troy
1970 *The Legislation of Morality: Law, Drugs, and Moral Judgment*. New York: Free Press.
- Dye, Thomas R.
1969 "Inequality and civil rights policy in the states." *Journal of Politics* 18:1080-97.
- Foley, John W.
1977 "Trends, determinants and policy implications of income inequality in U.S. counties." *Sociology and Social Research* 61:441-61.
- Graham, James M.
1972 "Amphetamine politics on capitol hill." *Society* 9:14-22.
- Gusfield, Joseph R.
1963 *Symbolic Crusade*. Urbana, Ill.: University of Illinois Press.
- Jacobs, David
1978 "Inequality and the legal order: an ecological test of the conflict model." *Social Problems* 25:515-25.
- Jacobs, David and David Britt
1979 "Inequality and police use of deadly force: an empirical assessment of a conflict hypothesis." *Social Problems* 26:403-12.
- Jencks, Christopher, M. Smith, H. Acland, M. Bane, D. Cohen, H. Gintis, B. Heyns and S. Michelson
1972 *Inequality*. New York: Basic Books.
- Kitsuse, John and Aaron Cicourel
1963 "A note on the uses of official statistics." *Social Problems* 11:131-9.
- Lenski, Gerhard
1966 *Power and Privilege*. New York: McGraw-Hill.
- Namboodiri, N., L. Carter and H. Blalock
1975 *Applied Multivariate Analysis and Experimental Designs*. New York: McGraw-Hill.
- Netzer, Dick
1973 "Is there too much reliance on the local property tax?" Pp. 15-23 in George Peterson (ed.), *Property Tax Reform*. Washington, D.C.: The Urban Institute.
- The New York Times
1919 "Police strike in Boston." September 11:1-2.
- Ostrum, Elinor, Roger Parks and Gordon Whitaker
n.d. *Policing Urban America*. Washington, D.C.: U.S. Government Printing Office.
- Parks, Evelyn
1970 "From constabulary to police society." *Catalyst* 5:76-97.
- Platt, Anthony
1969 *The Child Savers*. Chicago: University of Chicago Press.
- Price, James E.
1966 "Testing the accuracy of crime statistics." *Social Problems* 14:214-22.
- Quinney, Richard
1974 "A critical theory of criminal law." Pp. 1-25 in Richard Quinney (ed.), *Criminal Justice in America*. Boston: Little, Brown.
- 1975 "Crime control in capitalist society: a critical philosophy." Pp. 181-212 in Ian Taylor, Paul Walton and Jack Young (eds.), *Critical Criminology*. London: Routledge and Kegan Paul.
- Reiss, Albert
1969 "Field survey of crime against small business." In *Crime Against Small Business: A Report of the Small Business Administration to the Select Committee on Small Business*. U.S. Senate, Ninety-First Congress, First Session, Document 91-14:53-143.
- 1971 *The Police and the Public*. New Haven: Yale University Press.
- Reiss, Albert and David Bordua
1966 "Environment and organization: a perspective on the police." Pp. 25-55 in David Bordua (ed.), *The Police: Six Sociological Essays*. New York: Wiley.
- Roby, Pamela
1969 "Politics and the criminal law: revision of the New York State penal law on prostitution." *Social Problems* 17:83-109.
- Rubenstein, Jonathan
1973 *City Police*. New York: Farrar, Straus and Giroux.
- Schuessler, Karl
1974 "Analysis of ratio variables: opportunities and pitfalls." *American Journal of Sociology* 80:379-96.
- Shannon, John
1973 "The property tax: reform or relief." Pp. 25-52 in George Peterson (ed.), *Property Tax Reform*. Washington, D.C.: The Urban Institute.
- Silver, Allan
1966 "The demand for order in civil society: a review of some themes in the history of urban crime, police and riot." Pp. 1-24 in David Bordua (ed.), *The Police: Six Sociological Essays*. New York: Wiley.
- Simon, Herbert A.
1959 "Theories of decision making in economics and behavioral science." *The American Economic Review* 49:253-83.
- Spilerman, Seymour
1970 "The causes of racial disturbances: a comparison of alternative explanations." *American Sociological Review* 35:627-49.
- 1971 "The causes of racial disturbances: tests of an explanation." *American Sociological Review* 36:427-42.
- 1976 "Severity of riot disorders." *American Sociological Review* 41:771-93.
- Stinchcombe, Arthur
1963 "Institutions of privacy in the determination of police practice." *American Journal of Sociology* 69:150-60.
- Taylor, Ian, Paul Walton and Jack Young
1973 *The New Criminology*. New York: Harper Torchbooks.
- Turk, A.
1969 *Criminality and the Legal Order*. Chicago: Rand-McNally.

- Walker, Helen and Joseph Lev
1953 *Statistical Inference*. New York: Holt, Rinehart and Winston.
- Weber, Max
[1922] *Economy and Society*. New York: Bedminster Press.
1968
- White, William
1965 *A Puritan in Babylon: The Story of Calvin Coolidge*. New York: Capricorn Books.
- Wilson, James Q.
1971 *Varieties of Police Behavior*. New York: Atheneum.
- 1975 *Thinking about Crime*. New York: Basic Books.
- Ziskand, David
1940 *One Thousand Strikes of Government Employees*. New York: Harper and Row.

THE PARADIGM CONCEPT AND SOCIOLOGY: A CRITICAL REVIEW*

DOUGLAS LEE ECKBERG

University of Tulsa

LESTER HILL, JR.

*Jacksonville State University**American Sociological Review* 1979, Vol. 44 (December):925-937

The thesis of this paper contends that many sociologists who have attempted to apply Kuhn's argument in analyzing the status of sociology have misunderstood, or have refused to accept, the central meaning of his paradigm concept. In this paper we first clarify the notion of paradigm as explicated by Kuhn and by Margaret Masterman, and note that the "exemplar" is the central element in the concept. We then analyze the usage of the concept by sociologists who have attempted to ascertain the paradigmatic status of sociology and we focus in particular on the work of Friedrichs and that of Ritzer. In so doing, we show that they have concentrated almost exclusively on the less important, more general meanings of the paradigm concept and thus lose the major thrust of Kuhn's argument. Possible reasons for this misuse are discussed. Finally, we argue that sociology has relatively few exemplars, lacks a clear-cut puzzle-solving tradition, and tends to operate from discipline-wide perspectives. In this regard, sociology is not a mature science; attempts to treat it as such within Kuhn's framework are misdirected.

INTRODUCTION

Undoubtedly one of the more influential and controversial scholarly books to emerge in the last few decades is Thomas S. Kuhn's (1962; 1970a) *The Structure of Scientific Revolutions*. The impact of this work has been felt in such diverse fields as history, philosophy, political science, anthropology, sociology, theology, and even art (Hollinger, 1973). Students of each of these disciplines, in assessing the

relevance of the paradigm concept for their own concerns, have begun arguments which continue to this time (see, for example, the wry account in Perry, 1977).

Although these discussions are interesting in their own right, it is the discussion among sociologists that is of primary concern here. There have been several attempts to use Kuhn's scheme of scientific structure to analyze the development of sociology. The results of these attempts have been far from satisfactory. In fact, there are almost as many views of the paradigmatic status of sociology as there are sociologists attempting such analyses. As we will demonstrate, sociology is seen as possessing anywhere from two to eight paradigms, depending on which analyst one chooses to cite.

One explanation of this phenomenon is that a number of sociological theorists have misused the paradigm concept. The

* Address all communications to: Douglas Lee Eckberg; Department of Sociology; University of Tulsa; Tulsa, OK 74104.

Revised version of a paper presented at the annual meeting of the Southwest Social Science Association, Dallas, Texas, April, 1976. We are indebted to Sheldon Olsen, Simona Draghici, Jeffrey C. Alexander, and the anonymous referees for their helpful comments on an earlier draft of this paper. The authors assume joint responsibility for this paper; the names have been listed alphabetically.

result of this misuse has been that the concept has come to be used in ways which Kuhn never intended. In some cases it has taken on attributes which he specifically disavows. Multiple interpretations of the term have had the effect of allowing sociologists to cite Kuhn as a source while, at the same time, they are not taking seriously the implications of his position.

We use the term "misuse" advisedly. As we will show later, Kuhn's original paradigm formulation left considerable room for variance in interpretation. Still, two aspects were central to the term even prior to 1962 (for example, Kuhn, 1957:ix): the cognitive nature of paradigms and the community structure in which they appear. Moreover, the writers discussed here were largely aware of Kuhn's (1970a) later explication of the concept. When they miss either aspect of paradigm, they misuse the concept in a technical sense, even when their arguments are otherwise compelling. Their general positions may command respect, but their reliance on Kuhn is ill-founded.

In this paper we shall (1) provide a clear explication of the paradigm concept by following definitions and uses of the term by Kuhn (1962; 1970a; 1970b; 1974) and Masterman (1970), (2) show the various ways in which sociologists have used the concept, (3) attempt to ascertain just why such a theoretically important contribution has been so misused, and (4) provide our own version of the paradigmatic status of sociology. This paper will not consider the validity of Kuhn's overall position.

COGNITIVE ASPECTS OF PARADIGMS

In one respect it is not surprising that the paradigm concept has been misconstrued. Kuhn himself admits that his original explication was obscure (Kuhn, 1970a:181). Even a sympathetic critic (Masterman, 1970) suggests that Kuhn uses the term in at least twenty-one different ways, but she also notes that the various usages fall into three main categories: metaphysical, sociological, and construct paradigms. By the time the concept found its way into general sociological dis-

course, Kuhn had made several efforts to clarify its meaning. Others, however, seemed more intent on stretching it. As Perry (1977:40) notes, "... if Kuhn has been concerned to delimit the meaning of his key terms, others have been engaged in extending them" (see Heyl, 1975:62).

Without necessarily agreeing with the specific labels employed, we can agree with Masterman that paradigm refers to beliefs at three different levels. At the broadest level of generality (corresponding to what Masterman calls "metaphysical paradigms," or "metaparadigms") are unquestioned presuppositions. Kuhn does not overtly grant such usage, but Masterman finds it abundant in his work, and it is the only kind of paradigm to which his philosophical critics have referred (Masterman, 1970:65).

More restrictive is Kuhn's disciplinary matrix (corresponding roughly to Masterman's sociological paradigm), which represents the shared commitments of any disciplinary community, including symbolic generalizations, beliefs, values, and a host of other elements (Kuhn, 1970a:182ff.). A disciplinary matrix may be seen as the special subculture of a community. It does *not* refer to the beliefs of an entire discipline (e.g., biology), but more correctly to those beliefs of a specialized community (e.g., phage workers in biology). This is an important point which will be discussed in more detail below.

The most restrictive use of paradigm is reserved for what Kuhn calls an "exemplar." Corresponding to what Masterman labels an "artifact" or "construct" paradigm, this term refers, first of all, to the concrete accomplishments of a scientific community. What many of his critics (and supporters) have failed to see is that it is the exemplar which is the most central meaning of paradigm for Kuhn. Compared with disciplinary matrix, for example, he states that exemplar is the deeper of the usages (Kuhn, 1970a:175; 1974:463, 471ff.).

Since the crucial meaning of the paradigm concept for Kuhn is the exemplar, it is important that we understand in detail what he means by this term. By "exemplar," Kuhn means "initially, the

concrete problem-solutions that students encounter from the start of their scientific education, whether in laboratories, or examinations, or at the ends of chapters in science texts" (1970a:187). To such problem-solutions, Kuhn adds "at least some of the technical problem-solving found in the periodical literature that scientists encounter during their post-educational research careers and that also show them by example how their job is to be done" (1970a:187).

Masterman helps us to begin to unravel some of the confusion associated with the paradigm concept by noting that a "paradigm is a concrete 'picture' of something, A, which is used analogically to describe a concrete something else, B" (1970:77). Masterman is telling us that the important question is not what an exemplar *is* (such that one can enumerate it) so much as what it *does*. Kuhn never quite succeeds in making this point explicit, which may explain some of the confusion surrounding his argument. Where he has failed, however, Masterman (1970:70) succeeds:

[if] we ask what a Kuhnian paradigm *is*, Kuhn's habit of multiple definition poses a problem. If we ask, however, what a paradigm *does*, it becomes clear at once . . . that the construct sense of "paradigm," and not the metaphysical sense . . . is the fundamental one. *For only with an artifact can you solve puzzles.* (emphasis in original)

Again:

What Kuhn must be feeling his way to, in talking about an artifact which is also a "way of seeing," is an assertion, not about the *nature* of his artifact, but about its *use*: namely, that being a picture of one thing, it is used to-represent another. . . . (Masterman, 1970:76-7, emphasis added)

It was following Masterman's comments that Kuhn began making more explicit the *function* of an exemplar:

The resultant ability to see a variety of situations as like each other . . . is, I think, the main thing a student acquires by doing exemplary problems. . . . After he has completed a certain number, which may vary from one individual to the next, he views the situations that confront him as a scientist in the same gestalt as other members of his specialists' group. (Kuhn, 1970a:189)

The term, paradigm, is taken from linguistics, where it refers to patterns of declension, conjugation, and so forth, of types of words, such that a given word will make sense in different contexts of use (e.g. *amo*, *amas*, *amat*). Kuhn's most straightforward demonstration of a paradigm element involves the various derivations of Newton's $f = ma$, such that in various contexts the formula comes to be $mg = md^2/sdt^2$, $mg\sin\theta = -md^2/sdt^2$, $m_1d^2s_1/dt^2 + k_1s_1 = k_2(d s_2 - s_1)$, and so on (Kuhn, 1974:464 and passim). The point is that symbolic (and other) generalizations in science are applied in areas where it is nowhere immediately apparent that they fit. Fitting is accomplished through a series of examples given to a student which indicate that generalization A can be modified to become generalizations A', A'', A''', and so forth, as the situation changes. All of these make sense in terms of the base generalization which spawned them.

The function, then, of an exemplar is to permit a way of seeing one's subject matter *on a concrete level*, thereby allowing *puzzle solving* to take place. This is central for Kuhn because it is the basis for his notion of normal science, and normal science is the basis for his demarcation between science and nonscience (Kuhn, 1969; 1970b:245-6). For a discipline to be a science it must engage in puzzle-solving activity; but puzzle solving can only be carried out if a community shares concrete puzzle solutions, or exemplars. It is the *exemplar* that is important, not merely the disciplinary matrix, and certainly not merely the general presuppositions of the community. The latter may be important (see Holton, 1973; 1975), but they do not direct ongoing, day-to-day research.

Something more should be said about the interrelationships among the three levels of paradigm. Perhaps the most important point is that they are embedded one within the other. That is, the greater structure (the metaphysical paradigm) acts as an encapsulating unit, or framework, within which the more restricted, or higher-order, structures develop.¹ A spe-

¹ In this discussion "higher" refers to more restricted levels of belief-consensus. Shared exem-

cific disciplinary matrix will not develop within just any arbitrary *Weltanschauung*. An exemplar will be even further restricted. Before exemplars could develop, say, in sociology, one would have to accept some basic sociological pre-suppositions. It must be stated immediately that the presence of a disciplinary matrix does not guarantee in any way that normal science will develop. Kuhn is attempting to describe the structure of a science, not give guidelines for its accomplishment. In Kuhn's (1970b:245) own words:

... I claim no therapy to assist the transformation of a proto-science to a science, nor do I suppose that anything of the sort is to be had. ... If ... some social scientists take from me the view that they can improve the status of their field by first legislating agreement on fundamentals and then turning to puzzle solving, they are badly misconstruing my point.

Returning to the interrelationships among the three levels of paradigm, we find that each lower level has directive power over the next higher level such that the development of the higher level can be seen as an articulation of the lower. There is a reflexive side to the relationship, however. A "revolution" is that reconceptualization of a lower order belief made necessary by the presence of anomalies in the next higher level. Anomalies are possible only because each higher level of belief is more constrained than the previous level. When we reach the level of the exemplar we are speaking of almost purely concrete applications of a highly structured body of belief. It is at this level that inconsistencies can and do become apparent. Such inconsistencies appear in the course of active puzzle solving.

STRUCTURAL ASPECTS OF PARADIGMS

As the foregoing discussion illustrates, "paradigm" (more precisely, "exem-

plars, for example, are at the highest level of consensus, while metaparadigms are low. Lower orders of belief, here, serve as bases upon which the higher orders are constructed.

plar") indicates a quite specific type of cognitive framework. What is equally important, however, is the structure of the group which collectively holds a paradigm (see Kuhn, 1970a:176-81; 1970b:251-3). Specifically, a paradigm presupposes an integrated community of practitioners. Ongoing puzzle solving, in fact, occurs only when a group exists which shares a consistent body of belief such that a consensus emerges with regard to the phenomena one investigates, the methods one uses, and so forth.

Kuhn's discussion of the training of new scientists exemplifies this group context of research. New students in a discipline are painstakingly taught the matrix of beliefs which mark the discipline. The change from confused undergraduate to sophisticated scientist is a massive one. Students first learn a basic sort of knowledge, then begin learning applications of it. Later they begin learning the specialized body of knowledge which constitutes their scientific specialties.

In all cases, the neophyte scientists are dependent on their texts and professors for explication of what may at first appear incomprehensible. A relatively unproblematic learning process is possible only where there is a lack of dispute over what constitutes real knowledge, the "truth" of the situation. It is only after long-term tutelage that students learn where to look for puzzles—research topics to which paradigms virtually guarantee a solution.

Thus, a paradigm locks its practitioners together within a fairly rigid, highly elaborated framework of beliefs. This is not a serendipitous overlapping of elements from various perspectives. It is made of the consensual beliefs of a self-contained community. No analysis which neglects the communal nature of a paradigm can capture the essence of the concept. It is so important that Kuhn claims that if he were to rewrite *The Structure of Scientific Revolutions* he would "open with a discussion of the community structure of science" (Kuhn, 1970a:176, emphasis added). What is truly surprising is the number of sociologists who have not seen or have preferred to ignore "the sociological base of [Kuhn's] position" (Kuhn, 1970b:253).

SOCIOLOGISTS AND THE USE OF THE
PARADIGM CONCEPT

As we have seen, a paradigm refers to that thing which allows scientists to go about solving the puzzles they continually generate. When used by sociologists, however, the term comes most often to mean no more than a general theoretical perspective, or even, as we shall see, a collection of elements from several more or less distinct perspectives. As such, the paradigms spoken of by sociologists are nebulous, shifting entities, indicating whatever one wishes them to indicate, and are limited only by the theorist's imagination. While a specialized scientific community can be readily isolated on the basis of (1) quite specific beliefs concerning subject entities and (2) professional relationships among active scientists, perspectives can be formed at will, depending only upon which elements in intellectual discourse one wishes to emphasize. To put it another way, the sociological pie can be sliced many ways, but it is problematical as to whether any of these slicings indicate paradigmatic structure.

Table 1 presents twelve different sets of authors who view the organization of sociology in at least ten fundamentally different ways—each claiming to present "Kuhnian paradigms." The earliest among these authors is R.W. Friedrichs (1970; 1972) who makes quite clear his debt to Kuhn, and whose initial description of paradigms follows Kuhn's closely (Friedrichs, 1970:4). In application, however, Friedrichs radically revises the concept. Having admitted that Kuhn's original scheme was not intended to be used in the analysis of social science (e.g., 1962:ix-x), Friedrichs (1970:18-9) proceeds to attempt just such an analysis. He concedes that there is no dominant paradigm in sociology (of the kind necessary for normal science), and that such may not be possible. (Of course, from Kuhn's perspective, paradigms, or exemplars, are not seen as being discipline-wide in the first place.) He then spends much space arguing about the distinctive nature of social science, and later in his work actually criticizes Kuhn for

failing to notice the difference (Friedrichs, 1970:324-5).

Friedrichs' basic contention is that in sociology there are two orders of paradigm. On one level are those paradigms which Friedrichs sees as much like those in natural science. Two of these are primary: (1) the system, or consensus paradigm (Friedrichs, 1970:25) and (2) the most popular contender, the conflict paradigm (Friedrichs, 1970:45). This type of paradigm is supposed to correspond to the "fundamental image a discipline has of its subject matter" (Friedrichs, 1970:55, emphasis removed).

However, according to Friedrichs, this primary order of paradigms is *not* the most crucial one for the social sciences. There is a "more fundamental paradigmatic dimension" in the social sciences, and that is the "image the social scientist has of *himself as scientific agent*" (Friedrichs, 1970:55, emphasis in original. For an evaluation of this "paradigm as a form of personal salvation," see Perry, 1977:42-4). Friedrichs contends that this level of paradigm is the more basic and has a controlling power over paradigms of the other order. Finally, Friedrichs maintains that there are two fundamental paradigms: the priestly and the prophetic. The choice between them determines the choice between the conflict and consensus paradigms (1970:290-1; also see Westhues, 1976, for an elaboration and extension of this argument).

Considering Friedrichs' lower-order paradigms, it is evident at once that they correspond, at *best*, to disciplinary matrices, and perhaps not even to that level of paradigm, as they are *discipline-wide* and do not divide sociology by our community criterion. Friedrichs' higher-order paradigms are even more metaphysical. We do not argue that such cognitive sets do not exist. We *do* hold that they are not group-bounded and that they affect no more than minimally the *direction* of research. Neither order of paradigm is of a concrete enough quality to support a puzzle-solving tradition. Postulation of such a structure implies that research is *not* strictly paradigmatic, that it does *not* utilize artifacts. Here, science (or at least

Table 1. Twelve Sets of Sociological "Paradigms"

<u>Carroll (1972)</u> ANOVA	<u>Douglas (1972)</u> (1) Hypothetical- Statistical (2) Phenomenological (?)	<u>Friedrichs (1970)</u> (1) Priestly (2) Prophetic
<u>Lehman & Young (1974)</u> (1) Conflict (2) Consensus	<u>Walsh (1972)</u> (1) Positivist (2) Phenomenological	<u>Westhues (1976)</u> (1) Class (2) Organization
<u>Kuklick (1972)</u> (1) Structural- functionalism (2) Ecological- interactionism (3) Operationalism	<u>Ritzer (1975)</u> (1) Social Facts (2) Social Definitions (3) Social Behaviors	<u>Sherman (1974)</u> (1) Nomological (2) Interpretive (3) Critical
<u>Bottomore (1975)</u> (1) Structural- functionalism (2) Historical (3) Structuralism (4) Phenomenological	<u>Denisoff, Callahan & Levine (1974)</u> (1) Microsociology (2) Social Evolutionism (3) Functionalism (4) Conflict Theory (5) Nominalism/Voluntarism	
(1) Marxism (2) Cultural and Personality School (3) Durkheimian (4) Weberians/Parsonians/ Cyberneticists	<u>Effrat (1972)</u> (5) Exchange/Utilitarianism (6) Freudianism (7) Symbolic Interactionism (8) Phenomenology/ Ethnomethodology	

social science) comes to be seen as a purely political undertaking in which research traditions and anomalous findings play no active parts. Such implications are quite different from those associated with Kuhn's notion of paradigm.

An important point that Friedrichs disregards is that Kuhn is interested in scientific activity as revolving about a technical or instrumental knowledge. Concern with oneself as an actor is concern with something fundamentally different. It is not surprising that the behavior postulated to accompany such divergent concerns would be strikingly different. The question is how an author could premise such differences yet state that the same model of behavior underlies both concerns.

It might be noted that Friedrichs (1972) does take note of Kuhn's clarification of the paradigm concept. Following Kuhn's discussion of the importance of exemplars in the development of a discipline, Friedrichs develops an idea for a type of exemplar for sociology which he calls "the dialectic." However, he once again

so revises the concepts that they lose their original content. In this case he argues that a stream of articles in major journals functions in the same way as do concrete accomplishments within a coherent research tradition. There are, of course, similarities between the two, but unless the streams themselves are part of a research tradition they do not lend themselves to technical puzzle solving.

Friedrichs is not alone, of course, in contending that the consensus/functional approach is one of the major paradigms in sociology. Lehman and Young (1974), Kuklick (1972), and Bottomore (1975) all claim that functionalism (along with various competitors) is a paradigm in sociology. The same argument against Friedrichs advanced above applies here. Functionalism and its contenders are simply *not* paradigms in the sense that Kuhn intended. They are not widely recognized achievements which practically and conceptually define the course of future research. If we read Kuhn correctly, the exemplar concept (paradigm) must indi-

cate a much more imposing authority (cf., Bryant, 1975:356ff.).

In each of the cases cited above the focus has been on what might be termed discipline-wide "paradigms"; they are not specific to substantive areas. Sociologists, with few exceptions, have stuck to this level of analysis. One writer goes so far as to claim that true specialties are not possible in sociology, that general ideas are of the greatest importance (Urry, 1973:466). Be this as it may, the greater number of theorists reviewed here have offered just such broad analyses (see, for example, Sherman, 1974; Walsh, 1972; and Wilson, 1970).

Although the sociologists cited above feel that there are, or have been, paradigms in sociology, there are others who feel that the discipline is still pre-paradigmatic. Among these are Denisoff et al. (1974:2-3), who contend that while sociology does not yet have a paradigm, there are certain *paradigmatic assumptions* underlying sociological work. From their discussion it is evident that they accept a broad definition of paradigm in that what they portray is an overarching matrix of beliefs (Denisoff et al. 1974:3-7).

Another author, Andrew Effrat (1972), feels that a rigorous application of the paradigm concept forces us to conclude that sociology is preparadigmatic. In his discussion of the concept, Effrat explicitly chooses to employ a "[c]onsiderably looser and more generous use of the criteria," and holds that such usage suggests "that there have been a number of reigning paradigms" (Effrat, 1972:11fn.). Having chosen this path, Effrat (1972:12-4) offers what is perhaps the most elaborate method yet for generating paradigms in sociology. Specifically, he employs a typology based upon the interaction of two dimensions: (1) level of analysis (micro vs. macro) and (2) substantive component emphasized (material, affective, interactional, and idealist or symbolist). He thus generates eight paradigms for political sociology alone, and he admits that there may still be more.

At the end of a complexity spectrum away from Effrat is Michael Carroll (1972), who presents us with a series of

assumptions which he contends underlie the "analysis of variance paradigm."

While not maintaining that this is the only paradigm in sociology, Carroll does state that it is extremely widespread. As is the case with most of the writers discussed above, Carroll deals only with discipline-wide ideas. He is also concerned with the methodological, rather than the substantive, assumptions of the perspective (though he shows interrelationships between the two). Moreover, while Kuhn concerns himself with the functions of paradigms, Carroll is concerned exclusively with their dysfunctions. In addition, Carroll's discussion does not directly consider the generation of puzzles, but rather the treatment of puzzles arising from other sources (cf. Kuhn, 1961). As an overarching generalization, Carroll's paradigm *may* be seen as a component of a disciplinary matrix, but *not* as an exemplar.

A view of paradigms similar to that of Carroll is the one presented by Jack D. Douglas (1971). Douglas holds that a hypothetical-statistical paradigm overlays most of sociology, infusing those competing paradigms which are, indeed, attached to substantive concerns. He argues that a difference between natural and social science lies in the fact that in natural science paradigm choice exists only between areas of specialization, while in the social sciences it exists across specialties (thus, they are "multiple paradigm"). Yet, following this, he states that the hypothetical-statistical method is seen to be "*the* valid paradigm for research methods in *any* area of specialization" (Douglas, 1971:46). His concern is closely related to that of Carroll and, in trying to place it in a Kuhnian framework, he opens himself to the same criticisms.

We come now to what may be the most mixed attempt to apply Kuhn's paradigm concept to sociology—that of George Ritzer (1975). Ritzer's analysis is at once promising and frustrating. It is promising because, in the abstract, Ritzer understands the concept, understands that it has been misunderstood by sociologists, and concerns himself with the *functions* of paradigms (e.g., Ritzer, 1975:5). It is frus-

trating because, having once grasped the concept, Ritzer then lets it escape him entirely.

As far as we know, Ritzer is the only sociological theorist who makes a clear distinction between disciplinary matrix and exemplar, and he is one of the few who recognizes that a paradigm need not apply to a discipline as a whole. Having seen all of this, Ritzer proceeds to act as if just the opposite were the case. First, his paradigms are discipline-wide. Secondly, and more important, Ritzer *dismisses* the importance of exemplars and self-assuredly asserts that "[t]he paradigm is the broadest unit of consensus within a science" (Ritzer, 1975:7). We have already seen how broad definitions lose the essential features of paradigm for us. Of course, it is perfectly admissible to analyze science in terms of metaparadigms: E. A. Burt (1954) did so in the 1920s. The problem with such an analysis in this particular instance is that it misses the puzzle-solving/puzzle-producing, community-based nature of exemplars, and gains nothing new for us. Kuhn does not present us merely with the old idea that metaphysical assumptions structure perceptions in science; rather, he presents us with an analysis of the *place* of such assumptions in the *social organization* of science.

Ritzer's analysis then, like most others, lacks a necessary specificity of referent. For if paradigms are the broadest units of consensus, how can they serve "to differentiate one scientific community (*or sub-community*) from another" (Ritzer, 1975:7)? The broadest unit of consensus in science will be some form of western scientific world view, or perhaps a linguistic organization of the world such as those discussed by sociolinguists since Whorf (1956).

In this regard, Ritzer's division of sociology into "social facts," "social behavior," and "social definitions" paradigms must be seen as arbitrary, while his statement that each paradigm has "an" exemplar is naive in terms of puzzle-solving traditions. Interestingly, what were seen as conflicting paradigms by others—structural functionalism and conflict theory—are, in Ritzer's scheme,

incorporated into a single social facts paradigm (e.g., Ritzer, 1975:57).

It might be asked how perspectives seen as so diverse by others can be placed within a single paradigm. The answer must lie with the theorists. We can only assert that paradigms are *unified* bodies of belief shared by a cohesive *community*. Ritzer joins what others put asunder, and he is far from alone in this regard. The sociological literature on paradigms is strewn with different pie-slicing arrangements. Friedrichs might argue that all three of Ritzer's paradigms fall within the consensus (or priestly) mode. Walsh and Wilson put all of the above (with the possible exception of social definitions) into a positivistic paradigm, while Friedrichs could hold that both positivistic and phenomenological paradigms are priestly. Sherman might assert that the two are separate paradigms joined by a third, emancipatory paradigm, and Douglas seems to argue that a statistical paradigm underlies all three of Ritzer's groups.

Those theorists who generate paradigms on the basis of arbitrary schemes miss *both* the cognitive and the structural aspects of the paradigm concept. Those who speak of conflicting schools of thought (e.g., Kuklick, 1972; and Westhues, 1976) are at least in the same ballpark as Kuhn. They, at least, recognize that his argument concerns structured groups.

In this context, the work of Nicholas Mullins (1973) deserves mention. Mullins is one of a number of sociologists of science who have applied the paradigm and related concepts to analyses of group structure in scientific communities. Recently he has used sociometric techniques developed for such studies (supplemented with a goodly supply of intuition) to indicate that there definitely are coherent theory groups within sociology. The groups he finds do not correspond, in any simple way, with those postulated above. Mullins contends that the variables he employs indicate that the structure of these groups corresponds rather well with that of theory groups in natural science.

*Although we are getting ahead of our argument, it is relevant to inquire here if the kinds of *ties* operating within natural

Table 2. Nicholas Mullins' (1973) Empirically Grounded Sociological Theory-Groups

(1) Standard American Sociology
(2) Symbolic Interactionism
(3) Small Group Theory
(4) Social Forecasters
(5) Ethnomethodology
(6) New Causal Theory
(7) Structuralists
(8) Radical-Critical Theory

science groups are at work within sociological groups. There is reason to doubt that the cognitive content shared by a sociological theory group is precisely the same as that indicated by the term paradigm. Mullins' analysis is directed at group structure rather than at cognitive ties. He admits that his techniques are useful for constructing indicators of group cohesiveness rather than for presenting the group relationships themselves. His roots are more in Derek Price's (1963) invisible colleges than they are in Kuhn's paradigms. Moreover, while occasionally mentioning "paradigmatic content," Mullins is content to call his structures "theory groups." Furthermore, he notes that while sociology seems to fit the model of group structure found in the natural sciences to a decent degree, there are some differences. Notably, (1) there is a lack of delineation between different stages of group development within sociology, but not in natural science, and (2) sociology appears to have a *looser* social and intellectual organization than does natural science (Mullins, 1973:130-6). More will be made of this later.

A problem with analyses such as that presented by Mullins (1973:321) is related to his admission that his methods merely present indications of social ties. These social ties might be concrete indicators of communities, and could, therefore, serve as evidence for the existence of paradigms. They are, however, necessary but not sufficient conditions for paradigms. In our search for paradigms in sociology then, Mullins' techniques can indicate the structure, but not the content, of theory groups. What is certain is that we cannot be sure that (1) sociology has the same structure as does natural sci-

ence, or that (2) the patterns that do exist are indicative of paradigm-sharing or paradigm-bounding.

MISUSE OF THE CONCEPT—WHY SOCIOLOGISTS?

If Thomas Kuhn is to be believed, paradigmatic status is determined by the workings of a unified group of specialists. If such is the case, one cannot divide a discipline freely into paradigms, but must be constrained by both group structure and cognitive consensus. Why then do sociologists appear to feel free to divide their discipline into various, inconsistent perspectives and call these divisions "paradigms?" It appears that we can look in two directions for the source of this dilemma: either to Kuhn, himself, or to the sociologists who have attempted to use his framework.

The simplest answer might be that Kuhn has failed to define his concept clearly enough, and that writers have been victims of ambiguity on his part (for criticisms of Kuhn's position in various respects see Lakatos and Musgrave, 1970; Shapere, 1971; Sheffler, 1967; and Trigg, 1973). This answer has some merit especially if we remember Kuhn's early multiple use of the term (see Masterman, 1970). Moreover, one of Kuhn's most detailed reassessments of the concept was not published until recently (Kuhn, 1974). However, with the lone exception of the hardback edition by Friedrichs, all of the people herein cited mention Kuhn's (1970a) postscript, his (1970b) article in the Lakatos and Musgrave (1970) reader, Masterman's (1970) article, or some combination of the three. Several merely cite, and then disregard, Kuhn's later works. As was stated above, where Kuhn has attempted to delimit the meanings of his terms, others have tried to extend them.

The above observation indicates that we should look in the direction of the sociologists in order to understand the confusion associated with the paradigm concept. A very important clue that can help us to get started is the longstanding concern among sociologists regarding the *scientific status* of the discipline. This is a concern which dates back at least to

Comte. The idea implies that the standard by which to measure social science is the success of natural science (Douglas, 1972:52-3). This concern has been fueled by Kuhn's simultaneous references to limited rationality and to science. He speaks of science in terms which have long been applied to sociology. With such a parallel, it has required only a small impetus to move some sociologists from seeing their discipline as sharing some elements with natural science to seeing it as being equal to natural science "paradigmatically."

The wish here is father to the thought, for it is only by disregarding Kuhn's warning that the differences between natural and social science communities served to crystallize his thoughts (Kuhn, 1962:x) that one can say, as does Friedrichs,

if one were to apply Kuhn's posture to the behavioral sciences, it would be possible to conceive of the divisive struggle currently being waged within sociology not as *humiliating proof* of the discipline's relative immaturity, but as evidence of its *coming of age*. (Friedrichs, 1970:2, emphasis added)

Friedrichs adds that taking such a stand will allow us to "ignore the *incessant demand* that we profess ourselves worthy of the label 'scientific.'" Such a stance will allow us to keep from "running in embarrassment" when our fundamental differences are pointed out (Friedrichs, 1970:2-3, emphasis added; also see Lachenmeyer, 1971).

Thus, sociologists find paradigms scattered across sociology, but only by corrupting Kuhn's model of science. The discovery of paradigms across the field of sociology have been made possible only by redefining the concept (Heyl, 1975:64-5; Perry, 1977; and Pocock, 1971:14fn.). Analysis, however, requires strict usage of terms. It is only by being strict that we come to understand the dynamics about which Kuhn intends to speak. Emphasis on discipline-wide paradigms must be seen as misplaced:

Paradigms pertain to fields like the study of heat, optics, mechanics, etc.; *there are not and cannot be* paradigms of physics or chemistry. In other words paradigms are not discipline-wide but sub-disciplinary. Their

span is likely to be coterminous with that of specialities; conversely, specialities will be paradigm-bonded social systems (Martins, 1972:19, emphasis added).

If this point is missed, we lose one of Kuhn's most fundamental contributions to discourse on the nature of scientific inquiry.

THE PARADIGMATIC STATUS OF SOCIOLOGY

What, then, is the paradigmatic status of sociology? An attempt to answer that question, especially after a critique of others who have tried the same, may be gratuitous. The important analysis is that of the paradigm concept itself, and of the prospects and limits of its use. Still, the status of sociology in this regard is intrinsically interesting, and such an analysis may help clarify the applicability of the concept.

Perhaps the first point to stress is that the general question as to whether sociology has paradigms at the discipline-wide level is moot; *all* disciplinary groups have paradigms (disciplinary matrices) of this sort (see Kuhn, 1970a:179; 1970b:272fn; and 1974:460fn.). At this level it seems that crisis, or, at least, conflict is inevitable. There is probably no need for a monolithic perspective at this level, and it could be unhealthy were one to emerge (see Merton, 1975:28). Here, a Kuhnian paradigm approach is inapplicable, for no truly extended research can take place at this level. Problems abound, but no real puzzles can be found. To the extent that this *is* sociology, it can be said to be a nonspecialized science (Urry, 1973). If this in essence is sociology, then it certainly does not progress by means of sequential concrete examples.

In this respect, of course, it can be (and is) argued that sociology is different from the natural sciences. If this argument is valid, however, then Kuhn's framework cannot be used to analyze the paradigmatic status of the discipline, and we "nonnatural" scientists should concentrate on doing whatever we are supposed to "nonnaturally." However, the consensus seems to be that sociology is, or will become, a science of the natural vari-

ety. If this position is adhered to, and if we are to use Kuhn's framework, then it is in the substantive areas of sociology that we must look for paradigms (exemplars). If they exist, they will be found in such areas as political socialization, status attainment,² ethnic relations, and so forth, *not* in functionalism, conflict theory, and symbolic interactionism. Those who state so emphatically that there are paradigms in sociology must support their assertions by showing that there is at least one area of research that is guided by concrete examples of scholarship, which serve to generate and to solve puzzles. What we often actually find is research modeled upon no other research at all, upon a short, soon-extinguished line of research or upon a single theorist's speculations. There is little extended puzzle solving. There are few instances in the literature where an important puzzle has been solved. Indeed, there are few puzzles, mostly problems. If a problem is considered important, it is never solved at all, but serves as a point of contention among variant perspectives.³ We find constant

arguing, bickering, and debate, but very little agreement. This lack of agreement affects operationalization and manipulation of concepts, such that different research requires different, often incommensurable data. The concepts themselves seem to change from study to study.

Let us be explicit. Although we see the present situation in sociology as being unsettled, we are *not* arguing that there can be no exemplary research in social science. For example, we feel that in the *substantive* area of attitude change paradigmatic research has long been conducted under the cognitive dissonance school of thought. This school has a strong research tradition. Countless puzzles have been generated and solved within it, and the necessary modeling process apparently has occurred. It should be noted immediately, however, that the schools of sociology are not similar to the school of cognitive dissonance. They are more loosely organized. Very loosely: A greater burden falls on the shoulders of a young sociologist than on those of a physicist. The sociologist is not provided with a set of clear normative guidelines followed by those in a tightly organized group.

The conclusion seems inescapable. If paradigms (exemplars) exist in the discipline of sociology, they are difficult to find. Moreover, if they do exist, they (1) must not be discipline-wide, (2) must be found within substantive areas of research, (3) must have communities of practitioners which coalesce around them, and (4) must be used to both generate and solve puzzles and thus generate a visible research tradition.

REFERENCES

² We should note here the current debate over the theoretical status of status attainment research (see, for example, Horan, 1978). Indeed, two anonymous referees suggested that this research is paradigm-based in the Kuhnian sense. It is not our purpose to enter into this debate in this paper. We do feel that those who seek paradigms in substantive areas such as status attainment are at least looking in the right direction. However, they still must show that the paradigms they find contain *both* the cognitive and the structural characteristics discussed above.

³ Regarding this discussion, it is relevant to note that many analyses of the paradigmatic status of sociology might be seen more accurately as thematic analyses in the sense discussed by Holton (1975). Holton (1975:334) explicitly warns us of the danger of confusing thematic analyses with such things as paradigms and world views. He then quickly notes two major differences between paradigms and themata. First of all, "... thematic oppositions persist during 'normal science,' and themata persist through revolutionary periods" (Holton, 1975:334). The point here is that thematic oppositions (e.g., order vs. conflict) are never resolved in the sense that a puzzle is solved, but are argued over endlessly. A second major difference between paradigms and themata is that "[t]o a much larger degree than ... paradigms ... thematic decisions seem to come more from the individual than from the social surrounding" (Holton, 1975:334). Hence, different individuals using a thematic perspective will slice the sociological pie in numerous ways.

- Ben-David, Joseph
1973 "The state of sociological theory and the sociological community: a review article." *Comparative Studies in Society and History* 15:448-72.
- Bottomore, Tom
1975 "Competing paradigms in macrosociology." Pp. 191-202 in Alex Inkeles, James Coleman, and Neil Smelser (eds.), *Annual Review of Sociology*. Palo Alto: Annual Reviews.

- Bryant, C. G. A.
1975 "Kuhn, paradigms, and sociology." *British Journal of Sociology* 26:354-9.
- Burt, Edwin Arthur
[1924] *The Metaphysical Foundations of Modern Physical Science*. New York: Anchor Books.
- Carroll, Michael P.
1972 "Considerations on the analysis of variance paradigm." *Pacific Sociological Review* 15:443-59.
- Crane, Diana
1972 *Invisible Colleges*. Chicago: University of Chicago Press.
- Denisoff, R. Serge, Orel Callahan, and Mark H. Levine
1974 *Theories and Paradigms in Contemporary Sociology*. Itasca, Illinois: F. E. Peacock.
- Douglas, Jack D.
1971 "The rhetoric of science and the origins of statistical thought: the case of Durkheim's *Suicide*." Pp. 44-57 in Edward A. Tiryakian (ed.), *The Phenomenon of Sociology*. New York: Appleton-Century-Crofts.
- Effrat, Andrew
1972 "Power to the paradigms: an editorial introduction." *Sociological Inquiry* 42:3-34.
- Friedrichs, Robert W.
1970 *A Sociology of Sociology*. New York: Free Press.
1972 "Dialectical sociology: an exemplar for the future." *Social Forces* 50:447-55.
- Heyl, John D.
1975 "Paradigms in social science." *Society* 12:61-7.
- Hollinger, David A.
1973 "T.S. Kuhn's theory of science and its implications for history." *American Historical Review* 78:370-93.
- Holton, Gerald
1973 *Thematic Origins of Scientific Thought*. Cambridge, Mass.: Harvard University Press.
1975 "On the role of themata in scientific thought." *Science* 188:328-34.
- Horan, Patrick M.
1978 "Is status attainment research atheoretical?" *American Sociological Review* 43:534-41.
- King, M.D.
1971 "Reason, tradition, and the progressiveness of science." *History and Theory* 10:3-32.
- Kucklick, Henrika
1972 "A 'scientific revolution': sociological theory in the United States." *Sociological Inquiry* 43:2-22.
- Kuhn, Thomas S.
1957 *The Copernican Revolution*. Cambridge, Mass.: Harvard University Press.
1961 "The function of measurement in modern physical science." *Isis* 52:161-93.
1962 *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
1969 "Comment (on the relationship between science and art)." *Comparative Studies in Society and History* 2:403-12.
- 1970a *The Structure of Scientific Revolutions*. 2nd ed. Chicago: University of Chicago Press.
- 1970b "Reflections on my critics." Pp. 231-78 in Imre Lakatos and Alan Musgrave (eds.), *Criticism and the Growth of Knowledge*. Cambridge, Eng.: Cambridge University Press.
- 1974 "Second thoughts on paradigms." Pp. 459-82 in Frederick Suppe (ed.), *The Structure of Scientific Theories*. Urbana: University of Illinois Press.
- Lachenmeyer, Charles W.
1971 *The Language of Sociology*. New York: Columbia University Press.
- Lakatos, Imre and Alan Musgrave (eds.)
1970 *Criticism and the Growth of Knowledge*. Cambridge, Eng.: Cambridge University Press.
- Lehman, T., and R.T. Young
1974 "From conflict theory to conflict methodology: an emerging paradigm for sociology." *Sociological Inquiry* 44:15-28.
- Martins, Herminio
1972 "The Kuhnian 'revolution' and its implications for sociology." Pp. 13-58 in T.J. Nosziter, A. H. Hanson, and Stein Rokkan (eds.), *Imagination and Precision in the Social Sciences*. London: Faber and Faber.
- Masterman, Margaret
1970 "The nature of a paradigm." Pp. 59-90 in Imre Lakatos and Alan Musgrave (eds.), *Criticism and the Growth of Knowledge*. Cambridge, Eng.: Cambridge University Press.
- Merton, Robert K.
1975 "Structural analysis in sociology." Pp. 21-52 in Peter M. Blau (ed.), *Approaches to the Study of Social Structure*. New York: Free Press.
- Mullins, Nicholas C.
1973 *Theories and Theory Groups in Contemporary American Sociology*. New York: Harper and Row.
- Perry, Nick
1977 "A comparative analysis of 'paradigm' proliferation." *British Journal of Sociology* 28:38-50.
- Phillips, Derek
1973 "Paradigms, falsification, and sociology." *Acta Sociologica* 16:13-30.
- Pocock, John G. A.
1971 *Politics, Language and Time: on Political Thought and History*. New York: Atheneum.
- Price, Derek J. desolla
1963 *Little Science, Big Science*. New York: Columbia University Press.
- Ritzer, George
1975 *Sociology: A Multiple Paradigm Science*. Boston: Allyn and Bacon.
- Shapere, Dudley
1971 "The paradigm concept." *Science* 172:706-9.
- Sheffler, Israel
1967 *Science and Subjectivity*. New York: Bobbs-Merrill.

- Sherman, L. W.
1974 "Uses of the masters." *American Sociologist* 9:176-81.
- Suppe, Frederick
1974 *The Structure of Scientific Theories*. Urbana: University of Illinois Press.
- Trigg, Roger
1973 *Reason and Commitment*. Cambridge, Mass.: Cambridge University Press.
- Urry, John
1973 "Thomas S. Kuhn as sociologist of knowledge." *British Journal of Sociology* 24:462-73.
- Walsh, David
1972 "Sociology and the social world." Pp. 15-36 in Paul Filmer, Michael Philipson, David Silverman, and David Walsh (eds.), *New Directions in Sociological Theory*. Cambridge, Mass.: M.I.T. Press.
- Westhues, Kenneth
1976 "Class and organization as paradigms in social science." *American Sociologist* 11:38-48.
- Whorf, Benjamin
1956 *Language, Thought, and Reality*. Cambridge, Mass.: M.I.T. Press
- Wilson, Thomas P.
1970 "Conceptions of interaction and forms of sociological explanation." *American Sociological Review* 35:697-710.

SUBURBAN STATUS EVOLUTION/PERSISTENCE: A STRUCTURAL MODEL*

JOHN M. STAHURA

Purdue University

American Sociological Review 1979, Vol. 44 (December):937-947

A structural model of suburban status change is generated which summarizes and extends previous studies of status persistence. Utilizing a sample of 714 suburbs, I evaluate a causal model of status persistence and compare the results with previous studies. This study shows that 1960 suburban status characteristics, age and population growth exert significant direct effects on 1970 status levels. However, the effects of growth on 1970 status levels, though significant for two of three status characteristics examined, are primarily spurious. This suggests they have a more minor role in the explanation of status change than is suggested by other studies. Additionally, employment specialization, percent black and suburban age are shown to have substantial indirect effects on 1970 status levels while they exert only small direct effects.

The major substantive focus of this study is the specification of a multiple-equation model of suburban status change which summarizes and extends the work of Farley (1964), Guest (1978), Collver and Semyonov (1978), and Stahura (1979). The authors of these studies did not attempt to specify a causal model nor make causal arguments regarding status change. Consequently, their conclusions should be re-examined in light of the results of a causal

analysis where both direct and indirect causes of status persistence are examined. Towards this end a causal model of status persistence/evolution is theoretically explicated and subsequently analyzed. The results are then compared with those of previous studies.

The concept of evolution/persistence has been utilized in urban ecology in several contexts. The first is the literature on the impact of racial invasion-succession on various characteristics (socioeconomic status, etc.) of urban ecological areas. This literature focused on the determination of the potential impact of racial change on the stability (thus persistence and/or evolution) of areal characteristics. Duncan and Duncan's (1957) and Taeuber and Taeuber's (1965) research best typifies this body of literature. In general, it is argued that racial transition has little

*Direct all communications to: John M. Stahura; Department of Sociology/Anthropology; Purdue University; West Lafayette, IN 47906.

I wish to thank Harvey H. Marshall and the anonymous reviewers for their helpful and cogent comments on an earlier draft of this manuscript. Of course, I am responsible for any remaining errors, as well as interpretations of the data. This research was funded by a Purdue Research Foundation Summer Faculty X-L Grant.



impact on the persistence/evolution of areal characteristics. Several reasons for the stability of areal characteristics are given: situational factors, the idea that each area within a metropolis has a persistent functional position in the metropolitan division of labor; and site factors, the idea that, once an area has been developed and its land utilized in a specific pattern to take advantage of the initial site advantages, any change in initial land usage tends to take place slowly.

The most recent utilization of persistence/evolution occurs in the suburban status change literature (Farley, 1964; Guest, 1978; Stahura, 1979; Marshall and Stahura, 1980) in which evolution is operationalized as longitudinal changes in the relative rankings of suburbs on various status measures at two points in time. This literature also demonstrates the persistence of areal characteristics despite the effects of other variables which are likely to influence status change. Additionally, Guest (1978) places suburban status persistence within a historical context in that he demonstrates differences in a pre-World War II model of suburban persistence and a post-war model; post-war persistence is much greater than pre-war persistence.

Collver and Semyonov (1978) have criticized the measurement of evolution employed in these previous studies. They argue that previous methodologies tend to mask evolution that occurs in areal units by dealing only with shifts in status rankings. Collver and Semyonov decompose suburban status change into changes in mean levels, changes in dispersion, and positional change; they then show how each of these components is differentially related to housing, age, population growth, distance from the city center and incorporation. Another important finding is that various status characteristics persist or change to various degrees and that the determinants of change also vary by characteristic.

STRUCTURAL MODEL OF SUBURBAN STATUS CHANGE

Previous studies of suburban status suggest a number of variables that may

affect status change: population growth, suburban age, initial status levels and geographical location. In addition to these, several other suburban variables are hypothesized to be related to status change: percent black, annexation and employment specialization. These variables are causally ordered in a specific fashion as reflected in Figure 1. In the discussion that follows, each subsection provides a rationale for the hypothesized relationships between each endogenous variable represented in Figure 1 and the various factors that are hypothesized to affect them.

Suburban status, 1970. Current status levels (1970) are viewed as primarily a function of earlier status (1960) levels and secondarily of population growth and/or annexation. Three indicators of status are used in this study: percentage of the suburb's population with twelve or more years of education, percentage employed in white-collar jobs, and percentage with incomes of \$10,000 or more (\$15,000 or more in 1970). Studies by Farley (1964), Guest (1978), and Stahura (1979) show that current status levels and earlier status levels are highly correlated, and there are several theoretical reasons to anticipate this relation.

Among the forces which account for the stability of status characteristics, as Duncan and Duncan (1955) point out, is the fact that housing is a durable commodity initially designed for occupancy by a particular income group with certain family size characteristics. Housing modifications are expensive and occur only if there is considerable demand from other groups or if demand on the part of the existing group declines. Both conditions existed in the cores of older central cities where middle-class neighborhoods often found themselves in the path of rapidly expanding immigrant and black populations with very different housing needs. At the same time the middle- and working-class residents of these areas were turning their attention toward suburbia, where transportation changes and government backed financial arrangements made such housing relatively attractive. The result was a considerable conversion of middle-class housing to lower- and working-class use.

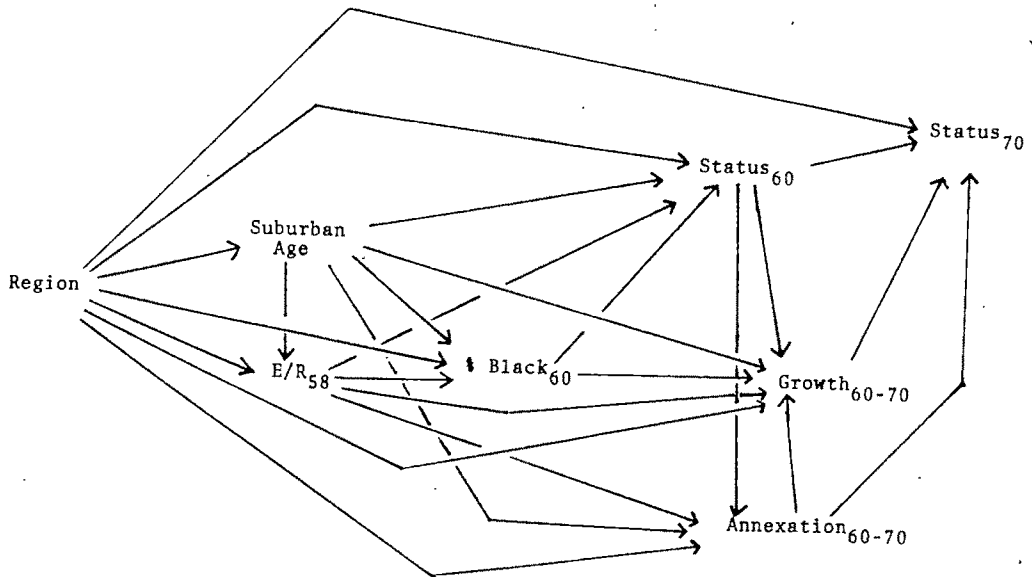


Figure 1. Hypothesized Model of Status Change

Such pressures were not experienced by suburbs in the 1950s and 1960s, creating a context within which considerable stability in the character of land use was possible. Another stabilizing force discussed by the Duncans (1955) is the location of a residential area with reference to job concentrations and amenities; areas located near working-class employment centers, for example, will face high demand from the group as long as the proximity persists.

In addition to these site characteristics, suburbs also play an active role in selecting in-migrants with socioeconomic characteristics consistent with those of the resident population. Control over zoning laws is probably the most efficacious—new housing is typically required to closely resemble existing housing. These laws also often prevent conversion of single family into multifamily dwelling units, thus blocking the influx of low-status persons. A related factor is enforced maintenance of existing homes, which is likely to be vigorous in high-status suburbs, both through formal as well as informal mechanisms. For these reasons very strong effects of 1960 status on 1970 status are anticipated, although these relations are not expected to be perfect since other factors also affect 1970 status.

Population growth between 1960 and 1970 is also expected to be positively related to 1970 status levels (Farley, 1964 and Guest, 1978). Rapidly growing suburbs are primarily adding population due to new housing construction rather than the subdivision of existing units. Thus, the incoming population is moving into new dwelling units which are generally more expensive than existing units of the same type. Consequently, the socioeconomic status of the in-migrant population is likely to be somewhat higher than that of residents, which produces the hypothesized positive relationship between growth and 1970 status characteristics.

Finally, annexation, as measured by the ratio of the 1970 land area to the 1960 land area, may influence current status levels. A suburb can change its overall status through annexation if the status characteristics of the annexed population are significantly different from the suburban population. Despite the obvious advantages of annexing adjacent higher-status residential areas (increased tax base, etc.), lower-status suburbs are assumed to be less successful in annexing such areas because of the greater resistance likely to be encountered. It is assumed that annexed populations will be equivalent or lower in status when compared to the suburb's status level. Consequently, an-

nexation is hypothesized to be negatively related to 1970 status levels.

Population growth, 1960–1970. Population growth (1960 to 1970) is considered to be a function of 1960 suburban status levels, percent black, suburban age and employment specialization (employment/residence ratio, 1958). It is anticipated that the age of a suburb (defined as the number of decades since the first census year it is reported having a population of 10,000) has an independent negative effect on population growth. As a suburb ages, land becomes more intensively utilized which precludes expansive housing or employment development. Thus older suburbs have less potential for population growth as reflected in the lessening availability of land for housing development.¹

Earlier status levels (1960) are also hypothesized to be positively related to population growth. Guest (1978) and Farley (1964) demonstrated that high status suburbs attract disproportionately large shares of suburban-ring populations. Additionally, Schnore (1965) showed that higher status residential suburbs are growing more rapidly than lower status employment suburbs. Consequently, it is reasonable to suspect that status levels influence population growth.

Employment specialization, as measured by the Employment/Residence Ratio, is expected to be negatively related to population growth. It is argued that, as a suburb becomes more specialized as an employment center and an inertia in land use emerges, the potential for population growth is diminished. With the commitment of land to employing activities, less land is available for housing development.

The percentage of a suburb's population which is black is hypothesized to be negatively related to population growth. Marshall and Stahura (1979) demonstrated that percent black is negatively related to white population change in medium and

large suburbs. In small suburbs, percent black interacts with black population growth to retard white growth. However, these negative effects mean a reduction in the rate at which the white population increases rather than indicating a loss of white population. Consequently, the net effect of percent black on total population growth would be to retard growth rather than to induce decline.²

Finally, annexation is hypothesized to be related positively to population growth. The basis for this hypothesis is straightforward—those suburbs that annex land also annex population and consequently will grow more rapidly than nonannexing suburbs.

Annexation, 1960–1970. Annexation is usually treated as a control variable in most ecological research. However, within the context of this model it has substantive importance and is treated as an endogenous variable. Why a suburb annexes adjacent land and what effect annexation has on population growth are important questions which require detailed treatments. The discussion of the determinants of annexation in this study, however, is necessarily limited to the variables included in the model.

There are a number of potential reasons why a suburb annexes—to expand tax revenues, to acquire land for expansion and development, to acquire population, etc. Given the lack of empirical evidence regarding annexation, it is assumed that the suburbs which need to acquire land for development and/or to expand their tax revenues are usually older, lower status suburbs with little industrial or employment concentration. Consequently, annexation is hypothesized to be positively related to suburban age and negatively to 1960 suburban status and employment specialization. In addition, region is hypothesized to be positively related to annexation though the rationale for the relationship is not clearly specifiable. Regional differences in annexation

¹ A more direct measure would perhaps be land use density which unfortunately is not available for many of the suburbs utilized in this study. A population density measure was also considered, but with population and land area change measures in the same model the inclusion of a density measure is statistically and conceptually impractical.

² Marshall and Stahura (1979) also show that black growth has neither an additive nor interactive effect on white growth for a sample of all suburbs. Hence, it is not likely that black growth is related to population growth in this study.

have been demonstrated in the literature and it is possible that they continue to exist given the continuing regional differences in other ecological phenomena such as population growth, black suburbanization, etc. (Klafl and Fuguitt, 1978).

Suburban status, 1960. Previous status levels (1960) are hypothesized to be a function of percent black, 1960, suburban age and employment specialization, 1958. Suburban percent black is hypothesized to be negatively related to 1960 status levels. The basis for this hypothesized relationship is simply that black Americans collectively still occupy an economically disadvantaged status; consequently, they are disproportionately represented in the lower status categories, even in the suburbs (e.g., see Spain et al., 1978). As a result, as suburban percent black increases, the aggregate status level of the suburban population is likely to be depressed.

Schnore (1965) clearly demonstrated the relationship between employment specialization and suburban status. Employment specialization is measured by the employment/residence ratio which is the ratio of the number of jobs in a suburb in 1958 which were in manufacturing, trade and service activities to the number of residents in that suburb employed in these categories. The E/R Ratio directly indicates the degree that a suburb imports or exports workers. Schnore found that residents of employment suburbs are generally lower in status than residents of residential suburbs. Though not explicated by Schnore, it is reasonable to argue that residential and employment activities are somewhat incompatible in that, if given a choice and the economic resources, a resident will choose an environment free from the negative conditions commonly associated with employment activities (e.g., pollution, congestion). Consequently, suburbs with a high degree of employment specialization are likely to have a resident population somewhat lower in status than the population of residential suburbs.

Finally, suburban age is hypothesized to be negatively related to 1960 suburban status. Older suburbs have more houses that, even if sound, are inferior to housing

in newer parts of the metropolis. Older houses tend to be located on smaller lots, require more maintenance and are less likely to have many of the modern conveniences commonly found in newer homes such as central air conditioning. This would lead higher-status persons to seek housing in newer areas thus producing the negative effect of age on suburban status.

Percent black, 1960. Percent black, 1960 is hypothesized to be a function of suburban age, employment specialization and region. The empirical basis for these hypotheses is found in the earlier work of Farley (1970) on black suburbanization. Farley found that blacks tend to be concentrated in older suburbs relatively close to the central city with substantial local employment opportunities. Consequently, I hypothesize that suburban age and employment specialization are positively related to percent black. Another important finding of Farley's (1970) work is a regional pattern of black suburbanization; north central and northeastern suburbs have lower percentage black compositions than suburbs in other regions. Consequently, region is hypothesized to positively affect black composition.

Employment specialization, 1958. Employment specialization as measured by the E/R Ratio is hypothesized to be related to suburban age and geographical region. Older suburbs are more likely to have greater concentrations of employing activities. With time, even high status residential suburbs will experience significant increases in local employment especially in retailing activities. Consequently, suburban age is hypothesized to be positively related to employment specialization.

Given the findings of Schnore (1965) and others that demonstrate regional variations in suburbanization patterns, we have included region in the model of status change primarily as a control variable. Region is operationalized as a dummy variable, where South and West are coded one and Northeast and North Central are coded zero. Consequently, region is hypothesized to be related to suburban employment specialization as well as suburban age, though the nature of the

hypothesized relationships are unclear. It is also possible that region may affect the remaining endogenous variables in the model in a direct fashion, in that region may act as a proxy for other unmeasured variables which may be related to differences in suburbanization patterns.

PROCEDURE

The model of status change that will be employed is a lagged endogenous-variable structural equation model. The model depicted in Figure 1 is an isomorphic representation of the theory of suburban status change explicated in the previous section. In the diagram, single-headed arrows represent a hypothesized unidirectional relationship between the linked variables. Variables within the model are classified as either endogenous (variables not predetermined) or exogenous (predetermined variables). Within the model, both 1960 and 1970 status measures are utilized; the model is a lagged-endogenous variable model which has several distinct properties and advantages in comparison with a multiple regression model. The obvious advantage in utilizing a structural model as compared with the use of a standard multiple regression model is that indirect causal effects can be identified. A less obvious advantage of using a lagged endogenous variable structural model as compared with a standard recursive structural model or a multiple regression model is that the longitudinal nature of some of the data allows for a discussion of several dynamic properties of the model, i.e., the existence of equilibrium states of the dependent variable and patterns of longitudinal change in the dependent variable (Anderson, 1977). However, the examination of the dynamic properties of the suburban change model goes beyond the more modest scope of this research.

The units of analysis are all incorporated places with 10,000 or more population in the 1960 Census of Population located within the boundaries of standard metropolitan statistical areas (SMSAs) that could also be identified in the 1970 census. There were 714 places meeting the above criteria for which all data were available. Data for employment spe-

cialization and percent black are not available for suburbs smaller than 10,000. Consequently, the smaller suburbs and the unincorporated areas could not be used in the analysis. However, a large majority of the suburban fringe population lies in the larger suburbs utilized in this study (about 75%).

FINDINGS: STRUCTURAL MODEL OF STATUS EVOLUTION

The results of the analysis of the status change models (a separate model of change is fitted for each of the three status characteristics) are presented in Table 1. When we consider the model of educational persistence, we find population growth ($\beta = .04$), 1960 educational levels ($\beta = .91$), suburban age ($\beta = -.04$) and region ($\beta = -.08$) have statistically significant ($p \leq .05$) direct effects on 1970 educational levels. It was not anticipated that suburban age would have a significant direct effect on 1970 status levels. However, the magnitude of the effect was not large ($\beta = -.04$) and it will be seen later that the primary effect of age on 1970 educational levels is indirect.

As predicted, 1970 percent white-collar is a function of 1960 percent white-collar ($\beta = .88$) and population growth ($\beta = -.09$). However, suburban age ($\beta = -.08$) again had an unanticipated significant direct effect on 1970 occupational levels. Population growth is negatively related to 1970 occupational levels and not positively as anticipated. The negative relationship between growth and 1970 percent white-collar suggests that suburban migrants in recent years are more heterogeneous with respect to occupations than in previous years. Migrants at all skill levels are now taking up residence in the fringe in response to increasing job decentralization (Dean, 1973; Guest and Cluett, 1974).

Finally, current suburban income levels are found to be a function of 1960 income levels ($\beta = .83$), suburban age ($\beta = -.16$) and region ($\beta = -.09$). Population growth had no significant partial effect on current income levels, contrary to what was anticipated. As a result, the role of popula-

Table 1. Results of the Analyses of the Suburban Status Change Models: Standardized Coefficients and Multiple R's¹

	Income, 70 ¹¹	Occupation, 70 ¹²	Education, 70 ¹³	Growth ²	Annex ³	Income, 60 ⁴	Occupation, 60 ⁵	Education, 60 ⁶	% Black ⁷	E/R Ratio ⁸	Age ⁹
Growth ²											
Annex ³	—	-.09	.04	—	—	—	—	—	—	—	—
Income, 60 ⁴	—	—	—	.16	—	—	—	—	—	—	—
Occupation, 60 ⁵	.83	—	—	—	—	—	—	—	—	—	—
Education, 60 ⁶	—	.88	—	—	—	—	—	—	—	—	—
% Black ⁷	—	—	.91	—	—	—	—	—	—	—	—
E/R Ratio ⁸	—	—	—	-.13	—	-.14	-.23	-.23	—	—	—
Age ⁹	—	—	—	.07	—	-.06	-.13	-.07	—	—	—
Region ¹⁰	-.16	-.08	-.04	-.25	—	-.21	-.20	-.33	.16	.21	—
R	-.09	—	-.08	.11	.15	-.22	—	—	.20	.09	-.28
	.89	.91	.92	.37	.15	.32	.37	.44	.22	.20	.28

¹ Coefficients reported are statistically significant at the .05 level. These coefficients are reestimates of the model parameters after nonsignificant paths were deleted. Durbin Watson's large sample test (h) for autocorrelation was performed on each of the three equations including lagged variables (Johnston, 1972:312-3). No significant autocorrelations were found.

² Three separate growth equations were estimated, one for each 1960 status measure. In no case was 1960 status related to growth. Growth = population growth 1960 to 1970 using Farley's (1964) growth index.

³ Annex = land area, 1970 divided by 1960 land area in square miles.

⁴ Income, 60 = percent earning \$10,000+, 1960.

⁵ Occupation, 60 = percent white collar, 1960.

⁶ Education, 60 = percent completing 12 or more years schooling, 1960.

⁷ % Black = percent black, 1960.

⁸ E/R Ratio = employment/residence ratio, 1958.

⁹ Age = suburban age.

¹⁰ Region = coded 1 = southern and western suburbs; 0 = other.

¹¹ Income, 70 = percent earning \$15,000+, 1970.

¹² Occupation, 70 = percent white collar, 1970.

¹³ Education, 70 = percent completing 12 or more years schooling, 1970.

tion growth as a key in suburban persistence and/or evolution has to be seriously questioned because in none of the models are the effects large. For income, the effect of growth is not statistically significant ($p \leq .05$); and even where the effects are statistically significant, only for educational levels is the nature of the relationship consistent with the one hypothesized.

Contrary to expectations, annexation exerted no significant direct effect on any of the three status characteristics. This indicates that annexed populations are similar to suburban populations in terms of status characteristics. The only effect annexation has is indirect through population growth and these effects are small (see Table 2). When growth affects status, the mechanism that apparently functions to change status levels is the discrepancy between in-migrants status characteristics and the characteristics of the suburban populations. For educational characteristics, suburban in-migrants are somewhat higher in educational attainment than suburban populations while in-migrants are less likely to occupy white-collar jobs than suburban residents.

In all three status models, the role of region as a control variable becomes evident. For the income and education models, region has significant direct effects on current status levels ($\beta = -.08$ and $-.09$, respectively), i.e., suburbs in the West and South are generally lower in income and educational status than those in the Northeast and North Central regions. These regional differences in suburban statuses are consistent with previous research (Schnore, 1965).

When we consider the direct effects in the remaining equations in the models, suburban growth is shown to be a function of percent black ($\beta = -.13$), employment specialization ($\beta = .07$), age ($\beta = -.25$), region ($\beta = .11$) and annexation ($\beta = .16$) as hypothesized. Of interest is the partial effect of employment specialization on growth. The negative effect of employment specialization on growth was unanticipated. But it is interpretable within the context of recent trends in job suburbanization; suburbs that are specialized as employment centers are apparently at-

tracting migrants who are seeking jobs or wish to live closer to jobs or want better housing. The negative environmental aspects usually associated with employment concentrations are apparently being overridden by economic necessity for an increasing number of suburban migrants. It was somewhat surprising that 1960 educational levels had no significant effect on population growth rates. Apparently, the moderate relationships between earlier status levels and growth rates as demonstrated by Guest (1978) are spurious; the relationship reflects a common set of causally prior variables (age, percent black and E/R Ratio).

Annexation was found to be solely a function of geographical region ($\beta = .16$). Regional differences in annexation exist. Southern and western suburbs are more likely to annex than northern and north eastern suburbs. However, suburban status, age and employment specialization did not have the anticipated effects on annexation. The identification of the determinants of annexation and the explication of the nature of regional differences in annexation remains as a future research goal.

The equations for the three 1960 status characteristics are also presented in Table 1. In each case, 1960 status is a function of percent black, employment specialization and suburban age. In addition, region significantly affects 1960 income levels. The effects of percent black and employment specialization on 1960 status characteristics are of importance since, despite the absence of significant direct effects, significant indirect effects of these variables on 1970 status emerge. In addition to the significant direct effects of age on 1970 status characteristics, the moderate partial effects of suburban age on 1960 characteristics also suggest large indirect effects on 1970 status levels.

The utility of using a multiple equation model becomes apparent when we try to interpret the relative importance of percent black, employment specialization and age in explaining current status levels. Using a single equation model, as was the case in previous research (Guest, 1978; Farley, 1964; Stahura, 1979), would lead to the conclusion that percent black and

employment specialization have no significant effects on 1970 status and that suburban age has a statistically significant but rather small effect on 1970 status. Using a multiple equation model, we see that percent black, employment specialization and age are important determinants of current status levels but that their effects are primarily indirect. The indirect effects of these and other variables on 1970 status characteristics are discussed briefly in the next section.

In Table 2 are presented the decompositions of the effects of each endogenous variable and region on each of the three status characteristics. The decomposition of the effects for 1970 educational levels reveals several interesting findings. The relation between population

growth and 1970 education is shown to be primarily spurious despite the significant direct effect. This pattern persists across the two remaining status characteristics; the relation between population growth and 1970 occupational and income characteristics are also spurious.

The effects of percent black, employment specialization and, especially, age on each of the 1970 status characteristics are shown to be primarily indirect in nature. These three characteristics all operate through 1960 status levels in affecting current status levels. Of particular interest are the indirect effects of suburban age and employment specialization on current educational ($-.32$, $-.06$) occupational ($-.19$, $-.12$) and income levels ($-.20$, $-.05$). These indirect effects will be

Table 2. Decomposition of the Effects of the Study Variables on Three Suburban Status Characteristics

Education, 1970					
	Total ¹	Direct ²	Indirect ³	Spurious ⁴	Joint ⁵
Growth	.19	.04	.00	.15	.00
Annex	.00	-.01	.01	.00	.00
Education, 1960	.92	.91	.00	.01	.00
% Black	-.26	.00	-.22	-.04	.00
E/R Ratio	-.13	.00	-.06	-.07	.00
Age	-.36	-.04	-.32	.00	.00
Region	.04	-.08	.12	.00	.00
Occupation, 1970					
Growth	-.03	-.09	.00	.06	.00
Annex	-.04	-.01	-.02	-.01	.00
Occupation, 1960	.90	.88	.00	.02	.00
% Black	-.22	.00	-.19	-.03	.00
E/R Ratio	-.16	.00	-.12	-.04	.00
Age	-.28	-.08	-.19	-.01	.00
Region	-.02	.00	.02	.00	.00
Income, 1970					
Growth	.06	.00	.00	.06	.00
Annex	-.09	-.01	.00	-.08	.00
Income, 1960	.88	.83	.00	.05	.00
% Black	-.17	.00	-.12	-.05	.00
E/R Ratio	-.11	.00	-.05	-.06	.00
Age	-.29	-.16	-.20	.07	.00
Region	-.18	-.09	-.14	.05	.00

¹ Defined as the zero-order correlation coefficients between the independent variables and the 1970 status characteristics. These correlations are standardized regression coefficients and represent the average amount of change in the standard deviation of the dependent variable associated with a standard deviation in an independent variable.

² Defined as the path coefficient, which refers to the amount of change in the independent variable when both are measured in standard deviation units and the effects of all other variables in the particular equation have been controlled (Land, 1969).

³ Defined as the impact of a variable on 1970 status characteristics through other variables in the model. The calculation of this effect is described in Land (1969).

⁴ Defined as that part of the total correlation between an endogenous (independent) variable and 1970 status which is due to common causes (Land, 1969).

⁵ Defined as that part of the total correlation between an exogenous variable and 1970 status due to the correlations of the exogenous variable to other exogenous variables, which in turn are causally related to 1970 status (Land, 1969).

examined in some detail in the discussion section.

DISCUSSION

This study has presented a number of substantive findings of interest to urban ecologists. A causal model of suburban status change/persistence is developed that summarizes and reevaluates the previous research on suburban persistence. In the model, the indirect roles of suburban age, employment specialization and percent black in producing 1970 status levels are explicated. Suburban age, percent black and employment specialization affect current status levels inasmuch as they also affect earlier (1960) status levels. The implications for status persistence suggested by these findings are consistent with Farley's (1964) explanation of suburban socioeconomic persistence. Farley (1964) suggested that the "ecological niche" (the role that a suburb plays in the metropolitan division of labor) determines to a large extent the characteristics of a suburb's initial population composition and also that the persistence of a suburb's functional position insures the replacement of out-migrant populations with in-migrants who are similar in composition. It has also been shown that suburban functional roles persist; once a suburb attains an employing or residential character in relation to other suburbs it tends to remain that way (Stahura, 1978). It appears that suburban age and employment specialization are characteristics that partially define a suburb's position in relation to other suburbs in terms of functional role. What is implied by the findings in this study is that these characteristics serve as indicators of a suburb's initial ecological niche and that these indicators determine to a large extent the characteristics of early suburban populations. These population characteristics tend to persist since a suburb is not likely to change its functional role vis-à-vis other suburbs.

Farley (1964) illustrated his argument using two suburbs (at the time) of the Chicago metropolitan area; Hammond, Indiana and Evanston, Illinois. In its early developmental years, Hammond emerged

as an employment center while Evanston emerged as a residential center. The ecological niches occupied by these two places have persisted and their socioeconomic compositions have changed little in relation to one another; that is, Evanston still has a much higher status level. The role of age in retarding status increase can be demonstrated by making comparisons between Evanston and Hammond to newer employing and residential suburbs. In making such comparisons, it is generally found that newer employing and residential suburbs are higher in status than older suburbs (Stahura, 1975). Once an initial population composition is established as determined by its ecological niche, the composition is likely to persist since functional roles persist.

The supply of resources available within a suburb, the inertia in land use patterns that evolves with development, and types and quality of housing constructed in a suburb's developmental years are all related to the composition of the initial resident population. These ideas are hardly new. They have been articulated by Duncan and Duncan (1955) in their discussion of the persistence of neighborhood housing stocks. The point to be emphasized is that status persistence can be explained by suburban functional role persistence. If any status evolution occurs it is likely due to the effects of age on housing stock and the continuation or discontinuation of certain types of employment activities. Consequently, suburbs that undergo renovation or renewal (i.e., change in land usage patterns) are most likely to change their functional position within the metropolis and their population compositions. As of yet, few suburbs are undergoing renewal in the sense of land use transition but in the near future some evolution in land use is likely to occur as the inner ring suburbs begin to face deteriorating housing stocks and a loss of population and activities to other areas.

The role of population growth in the explanation of status persistence/evolution is overstated in previous research. In this study, growth is shown to have statistically significant effects on 1970 educational and occupational char-

acteristics though the relationship with occupation (negative) was inconsistent with that hypothesized. Population growth had no effect on current income characteristics. The finding that growth differentially affects suburban status characteristics is consistent with the findings of Collver and Semyonov (1978) who show different types of effects to each status characteristic. Guest (1978), however, argues that growth positively influences status change in a significant way. In this study it was shown that, in general, the effect of growth on current status levels is spurious. Consequently, the effect of growth on status change is minor and whatever effect does exist varies in nature according to the status characteristic.

REFERENCES

- Anderson, James G.
1977 "A social indicator model of a health services system." *Social Forces* 56:661-87.
- Collver, O. Andrew and Moshe Semyonov
1978 "Suburban change and persistence." Paper presented at the American Sociological Association annual meeting, San Francisco.
- Dean, Robert
1973 *The Suburbanization of Industry in the U.S.: An Overview*. Oak Ridge: Southern Regional Demography Group, 101-4.
- Duncan, Otis and Beverly Duncan
1955 "Residential distribution and occupational stratification." *American Journal of Sociology* 60:493-503.
1957 *The Negro Population of Chicago*. Chicago: University of Chicago Press.
- Farley, Reynolds
1964 "Suburban persistence." *American Sociological Review* 29:38-47.
1970 "The changing distribution of negroes within metropolitan areas: the emergence of black suburbs." *American Journal of Sociology* 75:512-29.
- Guest, Avery
1978 "Suburban social status: persistence or evolution?" *American Sociological Review* 43:251-64.
- Guest, Avery and Christopher Cluett
1974 "Metropolitan retail nucleation." *Demography* 11:493-507.
- Johnston, J.
1972 *Econometric Methods* (2nd ed.). New York: McGraw-Hill.
- Klaff, Vivian Z. and Glenn V. Fuguitt
1978 "Annexation as a factor in the growth of U.S. cities, 1950-1960 and 1960-1970." *Demography* 15:1-12.
- Land, Kenneth
1969 "Principles of path analysis." Pp. 3-37 in Edgar Borgotta (ed.), *Sociological Methodology*. San Francisco: Jossey-Bass.
- Marshall, Harvey and John Stahura
Forth- "Black and white population growth in com- American suburbs: transition or parallel development?" *Social Forces*.
Forth- "The impact of racial transition and com- position on the status of American sub- ing urbs." *Sociological Inquiry*.
- Schnore, Leo
1965 *The Urban Scene*. New York: Free Press.
- Spain, Daphne, Wade Clark Roof and Thomas L. Van Valley
1978 "Black suburbanization and socioeconomic status: 1960-1970." Paper presented at the American Sociological Association annual meeting, San Francisco.
- Stahura, John
1975 *Suburbs Growth and Development*. Ph.D. dissertation, Dept. of Sociology, Ohio State University.
1978 "The evolution of suburban functional roles." *Pacific Sociological Review* 21:423-39.
1979 "Structural determinants of suburban socioeconomic status." *Sociology and Social Research* 63:328-45.
- Taeuber, Karl and Alma Taeuber
1965 *Negroes in Cities*. Chicago: Aldine.

ENTRY INTO EARLY ADOLESCENCE: THE IMPACT OF SCHOOL STRUCTURE, PUBERTY, AND EARLY DATING ON SELF-ESTEEM*

ROBERTA G. SIMMONS

University of Minnesota

DALE A. BLYTH

*Center for the Study of Youth Development,
Boys Town*

EDWARD F. VAN CLEAVE

University of Minnesota

DIANE MITSCH BUSH

University of Arizona

American Sociological Review 1979, Vol. 44 (December):948-967

The purpose of this study is to examine the impact of the movement into early adolescence upon the self-esteem of children. Which children are most vulnerable to this role-transition and what is the effect of changes in school environment, pubertal development, and social behavior? With repeated survey interviews and nurses' measurements, 798 school children were followed from sixth into seventh grade in two different types of school systems. Findings indicate that, in seventh grade, white adolescent girls who have entered the new environment of junior high school appear to be at a disadvantage in comparison both to boys in general and to girls who do not have to change schools. Among the girls, the ones with lowest self-esteem appear to be those who have recently experienced multiple changes, that is, who have changed schools, have reached puberty, and who have also started to "date." Among boys, in contrast, early pubertal development is an advantage for self-esteem. These data thus demonstrate the way in which coping with a major role transition can be significantly affected by environmental context, level of biological development, and social behavior.

Adolescence has been characterized as a period of storm and stress compared to childhood (Hall, 1904), particularly in modern societies where this transition period to adulthood is long and the norms that apply are unclear. However, several investigators question the assumption of adolescence as a distressing period for the child. (See Elkin and Westley, 1955; Grinker et al., 1962; Douvan and Adelson, 1966; Offer, 1969; and Weiner, 1970.) The object of this study is to investigate (1) whether the movement from childhood into early adolescence is stressful, specifically in terms of youngsters' self-

esteem, (2) which types of children are most vulnerable in this regard, and (3) what specific impact pubertal development, environmental change, and new social behaviors have upon the self-esteem of early adolescents.

In a cross-sectional survey of 1,918 school children from grades 3-12 in Baltimore, Simmons et al. (1973) did identify early adolescence as an apparently disturbing¹ period for the self-picture of children in general, and of girls in particular (Simmons and F. Rosenberg, 1975), based on their scores on various psychological scales. To be more specific, the largest negative change seemed to occur *among 12 year olds*. Furthermore, according to Simmons et al. (1973), the child's environmental context appeared to have a stronger effect on the self-image than age-maturation. One of the major reasons 12 year olds were more likely than 11 year olds to show an increase in self-image disturbance appeared to be that most 12 year olds had recently entered junior high

* Direct all communications to: Roberta G. Simmons; Department of Sociology; University of Minnesota; Minneapolis, MN 55455.

The work of the senior author is currently supported by a Research Development Award from the National Institute of Mental Health, #2 KO2 MH-41688 and NIMH grant RO1 MH-30739 and a grant from the William T. Grant Foundation. The work of the second author is supported by the Boys Town Center for the Study of Youth Development. Appreciation for criticism and suggestions is expressed to Morris Rosenberg, Melvin Kohn, Jeylan Mortimer, Steven McLaughlin, Richard Bulcroft, Jon Lorence and George Bohrnstedt. Special gratitude is given to Dwight Rowe and the Milwaukee Public School System for their aid in this study.

¹ The term "disturbing" is used here to indicate any change in a direction presumed uncomfortable for the child. It is not meant to connote psychopathology.

school. Twelve year olds in *seventh* grade (and hence in a junior high school) were more likely to show negative self-images than twelve year olds in *sixth* grade (elementary school). There were no comparable differences between 11 and 12 year olds in the sixth grade or between 12 and 13 year olds in seventh grade. Thus, being in a traditional junior high school at the time of puberty appeared to be a significant factor affecting the child's self-image.

In sum, the Baltimore study identified a key developmental year at the beginning of adolescence as disturbing for the self-image, isolated females as being most vulnerable to this disturbance, and suggested that part of the problem was due to a marked change in the child's school environment at that point. While several other quantitative studies support this picture of self-image disturbance in early adolescence (Piers and Harris, 1964; Offer and Howard, 1972) and a greater self-concept disturbance for girls (Offer and Howard, 1972; Bohan, 1973; Hathaway and Monachesi, 1963), other investigations contradict these conclusions (see Long et al., 1968; Rosenberg, 1965; Bohan, 1973; and Maccoby and Jacklin, 1974:chap. 4).² The current study was conducted in order that these relationships could be tested again with a design that would overcome some of the limitations of the prior research.

In particular, there are four major limitations to the Baltimore study. First, similar to much of the prior research in this area, the Baltimore study does not follow the same children over time; it is cross-sectional and therefore the number and type of children negatively affected cannot be determined. In contrast, the current study is longitudinal and follows children through this key period with measures both in sixth grade and again in seventh.

A second limitation of the Baltimore study is that *all* seventh graders were attending junior high school. Thus, they had all recently moved from a protected

elementary school, where they usually had one teacher and one set of classmates, to a new, much larger, more impersonal junior high where their teachers, classmates and even rooms were constantly changing and expectations concerning behavior were markedly different. They had experienced a sharp environmental discontinuity at this key point in the life-cycle (see Benedict, 1954).

Since most other studies have not examined the role played by changes in adolescents' school environment, the question arises as to whether the same disturbance in self-picture would occur in a different type of school, a school in which early adolescents were confronted with less environmental discontinuity. A kindergarten through eighth grade school (K-8) might be expected to present the child moving from sixth to seventh grade with a less sudden change, both in terms of the impersonality of the environment and in terms of others' expectations for adult-like behavior on his part. In order to investigate this possibility, we have compared children moving into traditional junior high schools to children in K-8 schools who are moving from sixth to seventh grade *within the same school*.

This design enables us to explore the question of whether any self-image disturbance that does occur is significantly affected by *environmental context* or whether the result is due mainly to a developmental, *psycho-biological* process such as *puberty*. If the disturbance between sixth and seventh grade occurs regardless of school-type, the explanation will appear to be primarily maturational or developmental. If, instead, an increase in disturbance is more evident in the junior high school with its greater level of social discontinuity, then the change will appear to be heavily environmental or contextual.

We also would like to measure more directly the impact of puberty. The third limitation of the Baltimore research (and of many prior studies) has been the absence of an adequate measure of puberty. The individual's chronological age, which is frequently used, has been shown to be a poor indicator of physical development, particularly for this age group (see Tanner, 1961; 1971; Reynolds and Wines,

² Also see Engel, 1959; Katz and Zigler, 1967; Jorgensen and Howell, 1969 for other quantitative studies.

1948; 1951). In order to improve on this situation, the present study has included other indicators of physical maturation.

Thus, we shall be able to investigate the part puberty plays in challenging children's self-picture in school environments characterized either by continuity or by discontinuity.³ Although past studies do not deal with puberty in different environmental contexts, the literature does suggest that early developing boys generally have an advantage. It is unclear, however, whether early or late maturing girls are better off psychologically (see Clausen, 1975; Faust, 1960; Mussen et al., 1969:613-6).

A final limitation of the Baltimore study is that it contained scanty measures of "dating-like" behavior. Since one of the new major social activities in adolescence involves establishing social relationships with the opposite sex, it would appear important in this current research to investigate the impact of these new relationships on the self-picture for children who have and have not reached puberty in the different school environments. In this way, we can explore whether early dating is stressful or advantageous to the self-picture of different types of children.

In sum, with a key developmental year identified (the transition from sixth to seventh grade), we shall focus on the influence of environmental, biological, and social changes on adolescents' self-esteem. The logic of this paper will be to identify groups at greater risk and to try to specify more and more exactly which subtypes within these groups are most vulnerable in terms of self-esteem. This type of research is consistent with Kohn's (1976) call to investigators to take into account interactions of biological, psychological, and social structural conditions as they affect levels of psychological strain.

METHOD

Sampling

The present study was conducted within the Milwaukee Public Schools from

1974-1976. Seven hundred and ninety-eight school children from 18 elementary schools were followed from grade 6 to 7. These children were interviewed privately by trained survey interviewers, once in sixth grade and a year later in seventh grade. In addition, each student went through several brief sessions with a registered nurse to establish his or her level of physical development.

There were three main populations of schools from which we sampled: (1) eighth grade-top schools (K-8) which involved no change of schools for the child in seventh grade, (2) sixth grade-top schools (K-6) with social characteristics similar to the eighth grade-top schools—in particular, they were predominantly white schools, and (3) the remaining sixth grade-top schools (K-6), which were heavily black and thus not comparable to the K-8 schools.⁴ All seven K-8 schools were asked to participate; only one school refused. A stratified random sample of K-6 schools was chosen from each of the other two categories noted. The stratification variables were the percent of minority students in the school and the size of the school. Altogether there were 18 schools included in the final sample: six K-8 schools, eight comparable K-6 schools, and four predominantly black K-6 schools.⁵

Within the schools sampled, all sixth grade students were invited to participate, which gave every student *within* each stratum of the sample an equal probability of being invited. Parental permission was solicited from all sixth graders in the sampled schools in Milwaukee and was secured from 82% of the original population; 86% of these students remained in the school system for the two years of the longitudinal study.

Two criteria were important in the

⁴ Schools that were heavily Spanish-speaking in composition were excluded for all three populations, due to the unknown validity of our instruments with this ethnic group.

⁵ One of the original comparable K-6 schools refused and a new school was redrawn. Although not pertinent to this article, it should be noted that one original black K-6 school refused as well as one junior high into which black K-6 schools fed. New schools were redrawn.

³ See Seidman, 1960; Smith and Lebo, 1956; Blos, 1962; and Anna Freud, 1958 concerning the role of puberty in the adolescent crisis.

evaluation of the sample design: first, did the sample of schools reflect the population from which they were drawn?⁶ In fact, for each school-type the sample schools are very similar to the population of schools on a variety of variables: median family income, achievement scores, teacher's background, mean percentage of children who move in or out of the school, mean percentage of teachers with only a B.A., mean percentage of teachers with only one year experience (see Blyth, 1977).

A second criterion in the evaluation of the sampling design involved the comparability of the six K-8 schools and the eight predominantly white K-6 schools. It should be noted that the diversity of school-types within the Milwaukee public school system is primarily a function of idiosyncratic historical development rather than a matter of a clear policy difference that could threaten to bias our comparison. However, in order to claim that differences between children in supposedly comparable K-8 and K-6 schools reflect differential reactions, it is necessary to rule out obvious initial differences between the two groups of schools. The data show virtually no differences between the K-8 and comparable K-6 schools on the same wide variety of social characteristics mentioned above (see Blyth, 1977).

This analysis deals only with the white children in the comparable K-6 and K-8 schools since there are not enough black children in these two types of school to allow a separate subgroup analysis and since prior research indicates that black and white children react differently in terms of their self-esteem (Rosenberg and Simmons, 1972; Simmons et al., 1978; Simmons, 1978).

⁶ In order to test such comparability, we investigated whether the randomly drawn sample of K-6 schools within any given stratum of percent minority showed a sample mean more than one standard deviation away from the population mean for that stratum on either of two important characteristics: mean median family income of the area served by the school and the mean percent of under-achievers in the school. The samples involved in the analysis in this paper (that is, the K-8 schools and comparable K-6-Junior High schools) were fine according to this standard.

Measurement

Self-esteem. The major dependent variable used in this analysis is self-esteem. Self-esteem is defined here as an individual's global positive or negative attitude toward him- or herself. In this usage the individual with high self-esteem considers her/himself to be a person of worth, though not necessarily superior to others. Low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, or self-contempt. Self-esteem is measured here by the same six-item Guttman Scale used in the Baltimore study described earlier (Rosenberg and Simmons, 1972:chap. 2).

Since a key aspect of this study is to replicate the Baltimore research as well as to extend its findings, it was deemed important to use the same exact measure of the major dependent variable. (See Rosenberg and Simmons, 1972 and Simmons, Rosenberg and Rosenberg, 1973 for a discussion of the validity of this scale.) In the present Milwaukee study, the reproducibility is .927, the scalability is .765, the minimum marginal reproducibility is .690 and the percent improvement is .237 as computed by the Ford technique (Ford, 1950). In the Baltimore research, this measure was shown to correlate with the widely used Rosenberg self-esteem scale ($\text{Gamma} = .61$), but to be more appropriate for use with younger children. (See Rosenberg, 1965; Wylie, 1974 and Wells and Maxwell, 1976 for a discussion and highly positive evaluation of the reliability and validity of the Rosenberg self-esteem scale.)

Girls' puberty. In addition to school-type, pubertal development is a major independent variable. For the purposes of this paper we simply distinguish between girls who have begun to menstruate and girls who have not. This information was collected within a few weeks of the survey interview by a nurse who also weighed and measured the children and collected other relevant information.

Menstruation is typically a late sign in the process of pubertal development (Tanner, 1971). In our data, menstruation correlates significantly ($p < .01$) with the following other indicators of puberty for

seventh grade girls: height ($r = .40$), presence of underarm hair (.32), presence of a figure (.55), presence of acne (.41), and nurses' rating of overall physical maturity (.50).⁷ Thus, girls who have begun menstruating are likely to look more developed to themselves, their peers, and adults.

Boys' puberty. For boys, no clear and easy indicator of puberty exists. The best measure of pubertal development, according to Tanner (1971), would involve the measurement of the genitalia. However, it was not possible for us to secure school consent to undress the children; even if such consent could have been obtained, the rate of parental and child refusal would certainly have destroyed the random nature of the sample.

Therefore, we decided to use rate of measured height growth as our main indicator of puberty for boys. In sixth and seventh grade, relatively few boys have entered puberty (Tanner, 1971; Seidman, 1960). Thus we can be fairly certain that boys who are growing very slowly are prepubertal, that is, they have not yet entered the pubertal growth spurt. They are not likely to be at the other end of the spectrum and slowing down their growth as they reach adult height. In contrast, many girls at this age have almost completed their growth in height, and a slow rate of height growth cannot distinguish between early and late developers (Seidman, 1960).

In order to classify boys according to height growth, we utilized norms reported by Stolz and Stolz (1951). Stolz and Stolz followed the height growth of 67 boys through prepubertal, pubertal, and postpubertal periods and reported (p. 106) that the mean gain in height during the pubertal growth spurt was 76.7 millimeters in a year with a standard deviation of 9.18 millimeters and a range of 50.4 to 90.8 millimeters. In our sample, boys were classified as clearly within their pub-

ertal growth spurt if, at the minimum, their height growth was not more than one standard deviation below Stolz' mean. Obviously boys who were growing even faster than this were also classified as pubertal. The range for the rate of growth for these fast growers of 67.72 to 134.63 millimeters the past year encompassed 31% of our sample. At the other extreme, those who grew less than any pubertal boys in Stolz and Stolz' series were termed nonpubertal. These boys' yearly growth ranged from 25.42 millimeters to 49.915 millimeters, and they accounted for 40% of the sample. The middle group which grew 50.4 to 67.593 millimeters a year (29% of the sample) cannot be clearly categorized with these data as either in or not in their pubertal height spurt. (Our mean annual height growth for boys was 61.36 millimeters and the standard deviation was 22.35.)⁸

It should be noted that there is a fairly high correlation between height and pubertal growth ($r = .59$). In order to untangle the impact of actual height and puberty (or rate of height growth for boys), we must control for height when we examine the effects of puberty. However, in terms of numbers of cases, there are very few short boys in our sample who are other than prepubertal, and very few tall boys who are not in a phase of fast growth (see Blyth et al. In press).⁹ Thus, we cannot look at the effects of puberty for tall or short boys separately. In order to control for height, therefore, we include only medium height boys whenever we are inspecting the effects of boys' pubertal development. Among medium height boys, rate of height growth as an indicator of puberty correlates significantly ($p < .05$) with other indicators of puberty: presence of underarm hair ($r = .19$), self-reported rate of muscle growth (.11), degree of

⁷ Although classifications of pubic hair dispersion and breast development have been recommended as indicators of puberty (Tanner, 1971), it is extremely unlikely that either the school system or a sufficiently large random sample of parents or children would agree to our using measures which involved the children's undressing.

⁸ In cross-tabular analysis, this variable is trichotomized; in regression and correlation analysis a dichotomy and effect coding is utilized in which the nonpubertal and the middle group are contrasted to the clearly pubertal boys, in order to make the analysis as comparable as possible to that of the girls.

⁹ Future analyses will examine the impact of height itself and other body features upon self-esteem (see Blyth et al., In press).

voice change (.17), presence of acne (.30), presence of lip hair (.23), nurse's rating of muscular build (.41), and nurse's overall rating of physical maturity (.44).

Early dating behavior. A final major independent variable involves early dating behavior. Early dating behavior was indexed by the following three-item scale: "Do you ever go to dances or parties where there are both boys and girls present? Yes/No" "Do you ever go out with another girl and a couple of boys or meet a group of boys and girls at night? Yes/No" "Do you ever go out with a boy alone? Yes/No." This is a Guttman Scale with a coefficient of reproducibility of .92, a coefficient of scalability of .71, a minimal marginal reproducibility of .72 and a percent improvement of .20.

Measurement of change. In this study, not only is the *absolute* level of the dependent variable of self-esteem of concern, but the extent to which it changes between sixth and seventh grade is also important. We wish to determine whether there are gains or losses in the dependent variable from one year to the next, and whether different subgroups of children vary in the direction or degree of change. It is, of course, possible to compute a simple gain score in which the sixth grade self-esteem score is subtracted from the seventh grade self-esteem score.

However, in considering changes between the two years, it is necessary to control for the initial sixth grade score. Otherwise, in the case of self-esteem, children with initially low self-esteem will have more room for improvement, while children with initially high self-esteem will have more room on the scale to move downward (see Bohrnstedt, 1969). To adjust for these ceiling and floor effects, all analyses use the sixth grade value of the dependent variable (or the "Time 1 Score") as a covariate or control variable while investigating the effect of various independent variables on the raw change score. Thus, an analysis of covariance in a regression framework is used in which the dependent variable is the raw change score, sixth grade self-esteem is the covariate or control variable and the independent variables (such as sex of child and school-type) are "effect coded" and

treated as dummy variables. From this analysis we can derive adjusted mean change scores for subgroups—that is, subgroup change scores that adjust or, in effect, control for sixth grade self-esteem (Schuessler, 1971:209–10). In addition, the regression analysis yields standardized and unstandardized regression coefficients as well as F-tests of significance. The adjusted mean change scores for subgroups can also be derived more expeditiously from the Multiple Classification Analysis program of SPSS. With these methods, we can compare differences among subgroups in terms of direction and magnitude of adjusted mean change in self-esteem; that is, change adjusting for sixth grade self-esteem scores.

An alternate method would be to do an analysis of covariance in regression format that uses the Time 2 or *seventh grade value of self-esteem* as the dependent variable and include in the regression analysis the Time 1 or sixth grade value of self-esteem as well as the independent variables. That is, the dependent variable would be the Time 2 score rather than the raw gain score. In both cases the Time 1 variable would be controlled. We prefer the adjusted mean change scores because this method allows for easier inspection, interpretation, and communication of findings. However, the unstandardized regression coefficients for the independent variables (but not for the covariate) and the significance levels attached to them, as well as tests of significance based on increments in R^2 , remain identical regardless of which dependent variable is used—the change score or the Time 2 score.¹⁰

¹⁰ The identity of these values can be proved algebraically; that is, the use of the adjusted change scores does not double adjust for differences at Time 1 (see Bock, 1975:505). A copy of the proof of this identity can be secured from the senior author (Simmons), as well as more detail about derivation of the change score from either the Multiple Classification Analysis or the regression analysis presented with the figures. In the Multiple Classification Analysis program of SPSS, the adjusted mean for each subgroup is expressed as an adjusted deviation from the Grand Mean Change over all groups. In order to express change for each subgroup in terms of absolute gain or loss, we have added the Grand Mean Change itself to the subgroup deviation from the Grand Mean.

Table 1. Self-Esteem by Sex by School Type (Whites Only)*

Seventh Grade Self-Esteem	K-8 Schools		Comparable Jr. High Schools		Total	
	Males	Females	Males	Females	Males	Females
low	25%	35%	23%	45%	24%	41%
medium	33%	32%	38%	30%	36%	31%
high	42%	33%	39%	25%	40%	28%
	100%	100%	100%	100%	100%	100%
	(111)	(93)	(168)	(148)	(279)	(241)
			$\chi^2 = 17.74$		$\chi^2 = 18.29$	
			$p < .001$		$p < .001$	

*Regression Analysis	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of Increase in R ² when interaction added to equation
2-Independent Variable Equation				
Sex (Male = -1; Female = +1)	-.20	-.69	<.001	
School Type (K-8 = -1; Jr. High = +1)	-.06	-.21	—	
Intercept Constant		3.87		
2-Independent Variables Plus Interaction				p < .05
Sex	-.09	-.31	—	
School-Type	-.02	.80	—	
Sex by School Type	-.16	-.62	.04	
Intercept Constant		3.69		

It should also be noted that analysis of covariance can be performed only when there is no significant interaction of the independent variables and the covariate. All analyses presented in this paper were first tested to make certain this assumption was not violated. In this paper significance levels of $p \leq .10$ are reported and tests for interaction are based on whether inclusion of the interaction term adds significantly to the R^2 .¹¹

FINDINGS

This analysis is focused upon the way in which self-esteem in early adolescence is related to the nature of school environment, to level of pubertal development and to involvement in new kinds of social encounters with the opposite sex. Which types of children appear most vulnerable

at the entry to adolescence? We utilize two approaches in the answer to these questions. First, how do different types of children end up in seventh grade in regard to absolute self-esteem; which children demonstrate more or less favorable attitudes toward the self? Secondly, which children change more in the transition from sixth to seventh grade; that is, which children show greater decrements in self-esteem, which greater increments?

First of all, in this study, as in our earlier work, adolescent girls appear more vulnerable than boys in terms of their absolute self-esteem (see Bush et al., 1977-78; Simmons and Rosenberg, 1975). Table 1 shows that in seventh grade 41% of white girls score low in self-esteem compared to only 24% of white boys ($p < .001$).¹²

¹¹ In any regression analysis presented in the paper, the dependent variable was allowed to vary in its full range but trichotomized for cross-tabular analyses.

¹² The question arises, however, as to whether the relationships between sex and self-esteem might be contaminated by a response-bias often called "social desirability" (Crowne and Marlowe, 1964). This term is used to refer to the possible tendency of certain individuals or subgroups (e.g., females) to

Role of School Environment: Self-Esteem in Junior High vs. K-8 Schools

Does the nature of the school affect the relative adjustment of these boys and girls to the new adolescent role? As indicated above, it could be hypothesized that the greater discontinuity of the move into junior high school could present more self-esteem difficulties for the child than continued attendance at a K-8 school. In Table 1 we see that in both K-8 and junior high schools, seventh grade girls have lower self-esteem than do boys; however, only in junior high school is the difference large enough to reach statistical significance. It should be noted that almost half of the girls who are in a junior high school for seventh grade have what can be considered to be a very low opinion of themselves; they are almost twice as likely as the junior high boys to score low in self-esteem (45% vs. 23%) and they are also more likely to exhibit low self-esteem than girls in the K-8 school-type (45% vs. 35%).

White boys, in contrast, do not appear to be affected by school-type; their self-esteem is about the same whether they are in K-8 schools or junior high schools. This fact, coupled with the lower self-esteem shown by junior high girls when compared to K-8 girls, contributes to the greater discrepancy between the sexes in the junior high schools. As shown in Table 1, there is a difference of 22% between junior high girls and boys, but only a 10% difference in the proportion of girls and boys reporting low self-esteem in K-8 schools.

reply to questions in a way which they feel is socially desirable or acceptable rather than in a manner that expresses their actual ideas and opinions. In other words, children who are generally less willing to admit to socially undesirable thoughts may also be less likely to indicate low evaluations of themselves. In a random half of our seventh grade interviews we included questions designed to assess the extent to which respondents were biased in this way (see Crowne and Marlowe, 1964). However, when a partial correlation is run between sex and self-esteem, controlling for social desirability, the findings change very little over the zero-order correlation. The correlation between sex and self-esteem remains practically the same ($-.17$ and $-.19$); thus, females demonstrate a less favorable self-esteem, even when this control is instituted.

The regression analysis footnoted in Table 1 indicates that there is a significant increment in R^2 when the interaction between sex and school-type is considered above and beyond the additive effects of these two variables ($p < .05$). These results reflect the special vulnerability of girls in junior high schools. That is, girls alone appear to react to the difference in school environment.

Is this vulnerability of the girl a consequence of differential *change* in self-esteem as girls and boys move from sixth to seventh grade in the different types of school? An analysis of the longitudinal data allows us to see whether the noticeable difference in self-esteem among girls in different schools in seventh grade is in some way a result of the fact that girls moving into junior high change their self-picture more than do girls who remain in the same school (the K-8 school). In order to explore this question, as noted above, it is necessary to control or adjust for the student's sixth grade level of self-esteem. Without such a control, it would be impossible to rule out the alternative hypothesis that seventh grade differences are simply reflections of preexisting differences between the children in sixth grade and the concomitant ceiling and floor effects.

Figure 1 is a graph of the mean adjusted change in self-esteem between sixth and seventh grade for boys and girls in each of the school-types, adjusting or controlling for their self-esteem in sixth grade. Comparison of the adjusted mean change scores allows us to see clearly which groups are experiencing relative increments in self-esteem, and which are showing relative decrements. The regression analysis footnoted in Figure 1 uses the simple gain score in self-esteem as the dependent variable, sixth grade self-esteem (essentially the covariate), sex, and school-type as independent variables.

This longitudinal analysis also points to the junior high girl as being at special risk. As Figure 1 clearly indicates, it is the self-esteem of the junior high girls which changes the most. In fact, only *junior high* girls experience an adjusted *mean loss* in self-esteem between sixth and seventh grade. All other groups appear to increase

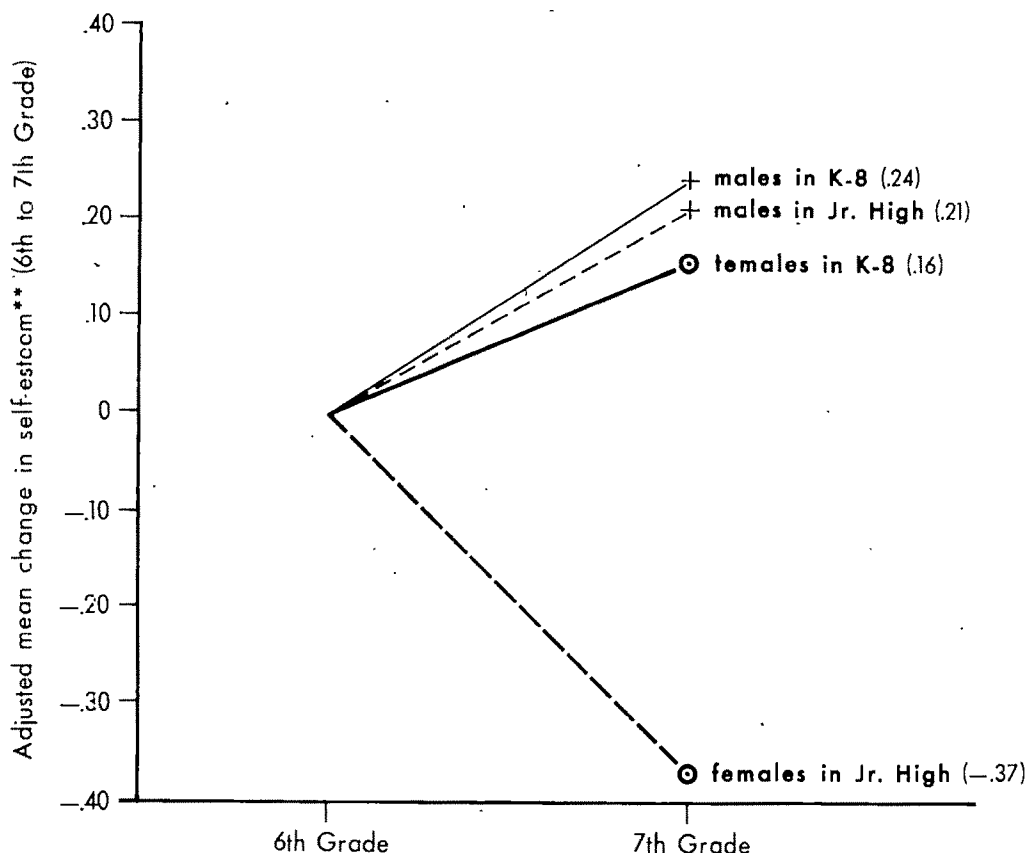


Figure 1. Adjusted Changes in Self-Esteem between 6th and 7th Grade by Sex and School-Type

**Dependent Variable: Self-Esteem Change

Analysis of Covariance in Regression Format (one equation including interaction) (N = 518)	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of increase in R ² when interaction added to equation
Sources of Variation				
Covariate-Sixth Grade				
Self-Esteem (Mean = 3.38)	-.50	-.50	.001	
Main Effect				
Sex	-.10	-.16	.004	
School-Type	-.08	-.14	.035	
Interaction				p = .06
School-Type by Sex Interaction	-.07	-.12	.061	
Intercept Constant		1.75		

their level of self-esteem. The regression analysis once again indicates a significant increment in R^2 when the interaction is added to the equation ($p = .06$).

Role of Puberty and Early Dating Behavior for Girls

Puberty. Since boys and girls react

quite differently to the transition into early adolescence, as evidenced by their reaction to their environmental context, the rest of the analysis will focus on each sex separately. First of all, what relationship is there between pubertal development and the self-esteem of girls? Can we further identify those children at greater risk if we take the girls' level of pubertal

Table 2. Self-Esteem in 7th Grade by School-Type and Dating Behavior) White Girls Only)*

Seventh Grade Self-Esteem	A K-8		B Comparable Jr. High Schools		C Total	
	Dating Least	Dating Most	Dating Least	Dating Most	Dating Least	Dating Most
low	35%	31%	42%	51%	39%	43%
medium	22%	46%	29%	32%	26%	38%
high	43%	23%	29%	17%	34%	20%
	100% (51)	100% (39)	100% (89)	100% (57)	100% (140)	100% (96)
	$\chi^2 = 6.86$ $p < .05$				$\chi^2 = 6.6348$ $p < .05$	

*Regression Analysis	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of Increase in R ²
2-Independent Variable Equation				
Dating Behavior (Date Least = -1; Date Most = +1)	-.08	-.29	—	
School-Type	-.16	-.61	.01	
Intercept Constant		3.56		
2-Independent Variables Plus Interaction				n.s.

development into account? In fact, the data show that in seventh grade pubertal development has little effect on girls' self-esteem in either school-type. While school-type itself significantly affects self-esteem, according to a regression analysis puberty (as measured by the presence of menstruation) has no significant impact.

Early dating behavior. In seventh grade some girls have begun dating-like behavior—that is, they have gone out either singly or in groups with members of the opposite sex. Table 2 shows that dating at this age is detrimental for the self-esteem of the girls.¹³ Fully 34% of girls who are not dating, or dating little, score high in self-esteem compared to only 20% of girls who are dating more ($p < .05$).¹⁴

¹³ Dating is dichotomized so a score of 0-1 is characterized as "Dating Least" and 2-3 as "Dating Most."

¹⁴ It should be noted that we are referring to early dating here. Douvan and Adelson (1966:215-6) also suggest that too early dating has psychological disadvantages. However, in late adolescence Douvan and Adelson (1966) indicate a lower level of adjustment among nondating girls.

In addition, while pubertal development itself has little effect on self-esteem, in combination with level of dating behavior, puberty may be a meaningful factor in increasing vulnerability. As Table 3A shows, early maturing (pubertal) girls who have also begun dating-like behavior are the most likely to indicate low self-esteem: 50% of such girls show low self-esteem in contrast to 36% to 40% of other girls. Moreover, as can be seen in Table 3B, 61% of the early-maturing, dating girls in junior high schools score low in self-esteem compared to 24% to 44% of those in other subgroups. (The regression analysis does not indicate that these effects reach statistical significance, however.)

Thus, these data suggest that girls who demonstrate the lowest self-esteem may be the ones who have experienced change in three major areas earlier than their peers—girls who have reached puberty early, who have embarked early on the new social behavior of dating, and who have experienced a major environmental change by moving into junior high school. Of course, not all of the girls with menstrual periods have reached puberty

Table 3. Self-Esteem by School-Type, Pubertal Development, Dating Behavior*
7th Grade White Females

% low self-esteem											
(A) Dating Behavior and Puberty				(B) School Type, Dating Behavior, Puberty							
Date Most		Date Least		K-8				Jr. High			
Have	Not	Have	Not	Date Most		Date Least		Date Most		Date Least	
Period	Period	Period	Period	Period	Not	Period	Not	Period	Not	Period	Not
50%	36%	38%	40%	36%	24%	36%	32%	61%	43%	39%	44%
(50)	(45)	(63)	(76)	(22)	(17)	(22)	(28)	(28)	(28)	(41)	(48)

*Regression Analysis	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of Increase in R ²
3-Independent Variable				
Equation				
School Type	-.17	-.63	.01	
Dating Behavior	-.08	-.30	—	
Puberty	-.02	-.09	—	
Intercept Constant		3.62		
3-Independent Variables				
Plus Interactions				n.s.

in seventh grade and not all of the girls who are dating have started as recently as seventh grade. Some of these changes have occurred earlier. Nevertheless, these girls have assumed a major change in social behavior and have experienced physiological change earlier than many of their peers. They all show less continuity with childhood than do other girls along these multiple fronts.¹⁵

Longitudinal analyses. Again, it is important to ask whether these differences in seventh grade self-esteem are reflective of change between sixth and seventh grade. The question is whether longitudinal analysis will also identify the early-maturing, dating, junior high school girls as particularly vulnerable. As indicated in

Figure 2 (adjusting for sixth grade self-esteem), the different types of girls in *K-8 schools* are more likely to change in a positive direction than are *junior high girls*, with one exception. The exception involves *K-8 girls* who have experienced early life changes in the other two areas and are *both* pubertal and dating. But it is the *junior high, dating, pubertal girls* who demonstrate the most negative self-esteem changes of all; that is, whose mean adjusted self-esteem change scores are the lowest. The regression analysis shows that the school-type and dating-behavior differences reach statistical significance, but the puberty effect and the effects of the 2-way and 3-way interactions do not. Thus, we cannot say with any certainty that the effects here are more than additive and we must be tentative about any joint effects of puberty. Nevertheless, there is suggestive evidence here, to be tested on subsequent samples, that in early adolescence a particularly vulnerable group of children is found among girls who have changed into a sharply discontinuous school environment and who have matured earlier and begun dating sooner than their peers.

¹⁵ An analysis using Jöreskog and van Thillo's (1973) computer program for estimating linear structural equations (LISREL) was attempted in order to indicate the direction of the causal process. Does dating behavior impact on self-esteem more than self-esteem impacts on dating? However, the parameters yielded were not stable but fluctuated, depending on which "instrumental" variables were used in the model. Therefore, we were not able to ascertain causal priorities at this point. Subsequent analysis with three or more waves of data should allow a better test of these effects.

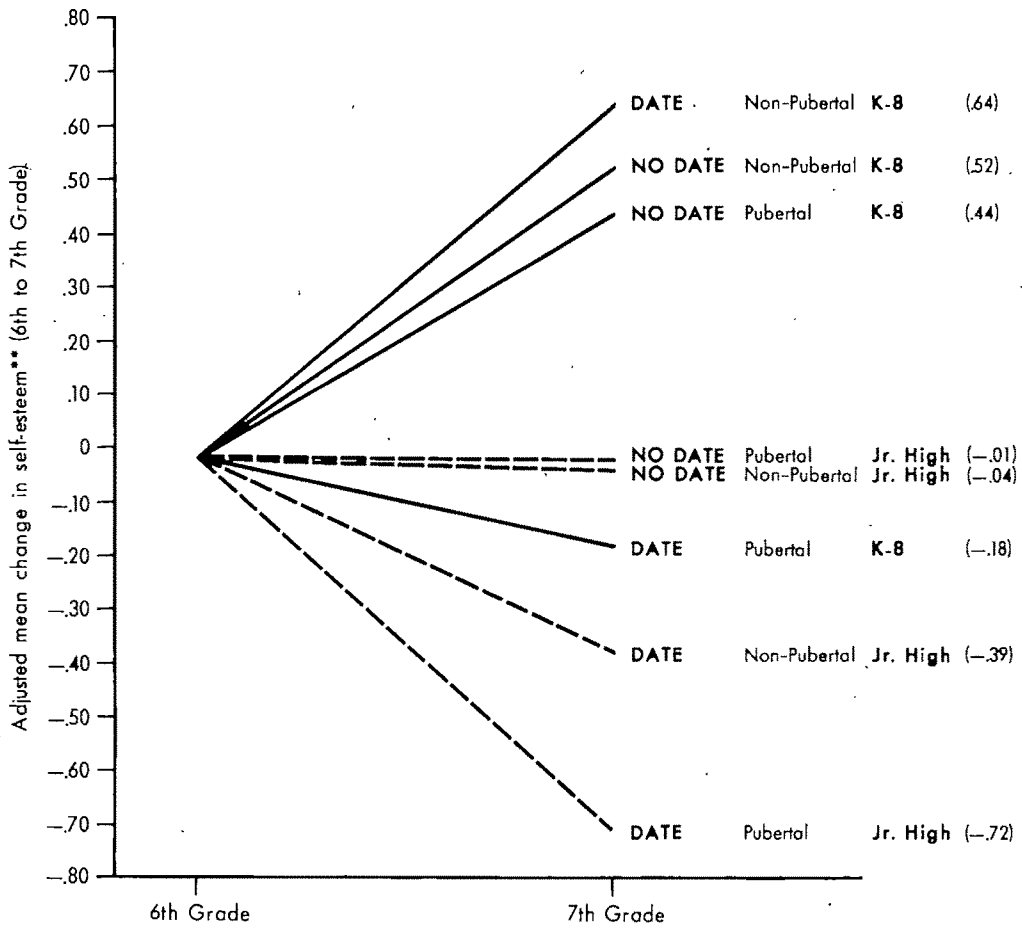


Figure 2. White Girls in Comparable Schools: Adjusted Change in Self-Esteem between 6th and 7th Grade by Dating Behavior, Puberty, and School-Type

**Dependent Variable: Self-Esteem Change

Analysis of Covariance in Regression Format (N = 233)	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of increase in R ² when interaction added to equation
Source of Variation				
Covariate-Sixth Grade Self-Esteem (Mean = 3.09)	-.44	-.44	<.001	
Main Effects				
School-Type	-.18	-.32	.002	
Dating behavior	-.11	-.19	.064	
Puberty	-.09	-.14	—	
Intercept Constant		1.39		
Interactions—2-way and 3-way				n.s.

Role of Puberty and Early Dating Behavior for Boys

Puberty. As noted above, the environmental change into junior high did not ap-

pear stressful for the self-esteem of boys although it did for girls. What about the impact of puberty for boys? While early development was, if anything, a disadvantage for the self-esteem of girls, there

is evidence that it is an advantage for boys. As discussed above, the indicator of pubertal maturation for boys is based on their rate of height growth. Controlling for absolute height by focusing on medium height boys, we see that fast-growing or pubertal boys in seventh grade are more likely to demonstrate high self-esteem than are slow-growing or nonpubertal boys (Table 4: 50% vs. 31%). This difference approaches significance only in junior high school and, in fact, disappears in K-8 schools. Thus, while the relationships are not strong, the direction is clear—the effect of early maturation, where such an effect occurs, is an advantage for medium height boys.

Early dating behavior. While early dating behavior is disadvantageous for girls, it has no statistically significant impact on boys. In fact, whatever slight differences there are lie in the direction of dating boys being less likely, not more likely, to score low in self-esteem (19% vs. 28%).

We noted that girls who experienced physiological and social changes earlier than their peers, i.e., were pubertal and dating, seemed to be particularly vulnerable in terms of their self-esteem. There is no such effect for boys. In fact it is the nonpubertal, nondating boy who is most

likely to demonstrate low self-esteem (32% vs. 19% to 22% of other groups). A regression analysis with seventh grade self-esteem as the dependent variable and school-type, pubertal development, and dating behavior as independent variables shows that the effect of puberty approaches significance ($B = .15$, $p = .10$), but that there is no significant effect of school-type or dating behavior and no significant interaction.

Longitudinal analysis. For boys there are too few cases in the various subgroups to compare mean adjusted changes considering school environment, puberty, and dating simultaneously as we did in Figure 2 for girls. Figure 3 therefore depicts mean self-esteem changes (adjusted for sixth grade self-esteem) for each of the combinations of two variables. In Figure 3A, it can be seen that while the self-esteem of pubertal boys rises in seventh grade regardless of school-type, the self-esteem of nonpubertal boys declines again regardless of school-type. Similarly in Figure 3B pubertal boys show a rise in self-esteem and nonpubertal boys a decline irrespective of dating behavior. The regression analysis suggests that puberty has a significant effect on self-esteem but there are no significant effects of dating,

Table 4. Self-Esteem in 7th Grade by School Type and Puberty (White Boys of Medium Height)*

Seventh Grade Self-Esteem	(A) K-8			(B) Comparable Jr. High School			(C) Total		
	Puber- tal	Medium	Non- Pubertal	Puber- tal	Medium	Non- Pubertal	Puber- tal	Medium	Non- Pubertal
low	29%	17%	29%	16%	29%	33%	23%	25%	31%
medium	33%	28%	29%	21%	32%	43%	28%	31%	37%
high	38%	56%	43%	63%	39%	23%	50%	45%	31%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
	(21)	(18)	(21)	(30)	(31)	(19)	(40)	(49)	(51)
$\chi^2 = 7.85$ $p < .10$									

*Regression Analysis	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of Increase in R ²
2-Independent Variable				
Equation				
Puberty	.13	.47	—	
School Type	-.02	-.51	—	
Intercept Constant		3.55		
2-Independent Variables				
Plus Interaction				n.s.

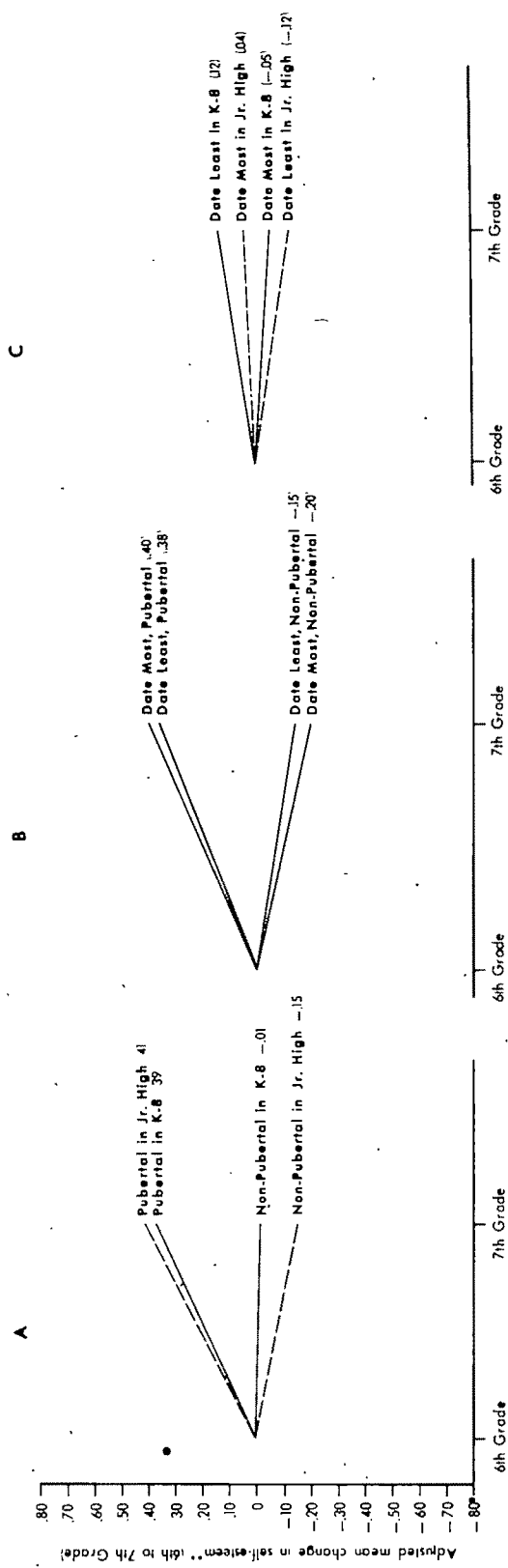


Figure 3. White Boys of Medium Height in Comparable School-Types: Adjusted Changes by School-Type, Physical Development and Dating Behavior

**Dependent Variable: Self-Esteem Change				
Analysis of Covariance in Regression Format (one regression equation using all variables at once) (N = 134)				
	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of increase in R ² when interaction added to equation
Covariate—Sixth Grade Self-Esteem (Mean = 3.69)	-.52	-.54	<.0001	
Independent Variables				
School Type	-.002	-.003	—	
Dating Behavior	-.01	-.02	—	
Puberty	.15	.28	.04	
Intercept Constant		2.09		
Interactions—2-way and 3-way				n. s.

school-type, or of any interaction among the three variables.

Thus, boys and girls react differently to puberty with boys showing a positive self-image response and girls, in combination with other changes, reacting, if at all, in a negative direction. The sexes also react differently to change in the school environment and early dating with boys unaffected and girls responding negatively. What we appear to have is a conditional relationship or an interaction—the children's responses to environmental change, pubertal change and early dating are conditional upon their sex. In order to test for the significance of these conditional relationships or these interactions with sex, we used an additional multiple regression analysis. This analysis indicates not only a significant interaction for sex and school-type but also for sex and puberty. The relevant regression equation used the following logic:

$$\begin{array}{lcl} \text{Change in} & = & a + \text{sixth grade self-esteem} + \text{sex} \\ \text{seventh grade} & & + \text{school-type} + \text{puberty} \\ \text{self-esteem} & & + \text{dating} \\ & & + \text{all possible interactions} \end{array}$$

All 3-way and 4-way interactions could be deleted without a significant decrement in R^2 . However, if the sex and puberty interaction were then dropped, the decrement in R^2 was significant ($F = 5.70$, $df = 1/355$, $p < .02$) or if the sex and school-type interaction were dropped, the decrement in R^2 approached significance ($F = 3.59$, $df = 1/355$, $p = .06$). However, the sex and dating interaction was not significant when we use this test with the .10 level of significance as a cutoff.

DISCUSSION

In summary, these data indicate that boys and girls react quite differently to the transition into early adolescence in terms of their self-esteem. While girls respond more strongly to the sharp environmental discontinuity of junior high school than to the physiological changes of puberty, boys seem to react to pubertal changes but not to those of the school environment. Whereas the self-esteem of girls is af-

fected negatively by multiple changes in environment, physiology, and social relationships, boys, if anything, respond positively at least to pubertal changes.

The net result of these analyses has been to identify, albeit somewhat suggestively, a particularly vulnerable group of early adolescents in seventh grade—that is, white girls who are attending junior high school and who have shown earlier pubertal development and earlier dating behavior than their female peers. In fact, while this article focuses on self-esteem, it should be noted that girls who have changed in these regards indicated greater vulnerability on behavioral measures as well. For example girls who have begun menstruating, that is those who are pubertal, are more likely than other girls to score low on standardized achievement tests (54% vs. 35%, $p < .01$) and to have low Grade Point Averages (GPAs) (28% vs. 18%, $p < .05$); girls who date early are more likely to be the ones to score low in achievement tests (52% vs. 41%), to have low GPAs (31% vs. 16%, $p < .01$), and to rate themselves as causing school behavior problems (38% vs. 16%, $p < .001$).¹⁶

These findings leave several puzzles to be solved. First, why do girls react negatively to major changes of this order while boys, if they respond, respond positively? In particular, why is early pubertal development an advantage for the self-esteem of boys, and, if anything, a disadvantage for girls? (It should be noted that this finding is consistent with prior research which also reports that early development is an advantage for boys but not necessarily for girls—see Mussen et al., 1969; Clausen, 1975; Faust, 1960). Finally, why are the pubertal, dating, junior high girls an especially vulnerable group of youngsters?

¹⁶ In seventh grade a low GPA refers to scores demonstrated by the bottom third of all children in the sample; a lower score on the Iowa Test of Basic Skills (achievement tests) refers to scores obtained by the bottom half of the total sample. In terms of the findings involving dating, the causal direction is unclear. Do early daters therefore have school difficulties or do those with school difficulties turn to dating early? Future analyses will examine such questions (see Jessor, 1977).

Value Systems

At this point, we can only make conjectures concerning the answers to these questions. First of all, part of the answer may lie in the fact that the sexes develop different value systems at this age. According to this reasoning, adolescence frequently entails an increased emphasis on appearance and on popularity with peers. For girls, however, these values placed on sociability and appearance suddenly assume priority while for boys they are still secondary to values established earlier in childhood. Earlier studies of sex-role development give support to this reasoning (see Douvan and Adelson, 1966; F. Rosenberg and Simmons, 1975; Simmons and F. Rosenberg, 1975; Bush et al., 1977-78). In addition, in this sample of seventh graders we find that looks are classified as somewhat more important by girls than by boys¹⁷ ($r = -.10$; $p < .01$), and that the valuation placed on looks has increased relatively more for girls between sixth and seventh grade. (The adjusted mean change score for girls is $+.10$ vs. $-.01$ for boys; $p < .05$. The last finding was based on a comparison of the sexes in terms of mean adjusted change in valuation of looks adjusting for the value placed on looks in the sixth grade.)¹⁸ In addition, the importance placed on popularity with the same sex is higher for girls than for boys in seventh grade ($r = -.20$; $p < .0001$) and has increased more for girls between sixth and seventh grade (adjusted mean change of $+.05$ vs. $-.23$; $p < .01$). Finally, when asked to rank the importance of popularity (being "well-liked"), competence (being "the best in the things you do"), and independence (being "able to do things for yourself") seventh grade

girls were more likely than boys to rank popularity first ($r = .18$; $p = .0001$, looking at the relationship between sex and whether students do or do not rank popularity first).

Thus, there is evidence that, for girls, looks and peer popularity are particularly important elements of their value system and have increased in importance. The difficulty with adopting a new basis for self-evaluation is that one's standing in a new area may be particularly ambiguous. Staking oneself on *others'* opinions of oneself, as peer popularity assumes great importance, would appear to provide the student with an especially unstable reference point, particularly if one is in a new school (a junior high school) where the peers who are evaluating one are less well-known. We are therefore suggesting that since girls place a higher value on popularity than boys, they will feel more vulnerable in junior high. If the girls are engaging in a new, unfamiliar, but important social behavior—e.g., dating—their uncertainty as to how they are doing and their vulnerability will be increased.

Placing high value on *looks* may also place one's self-picture in jeopardy if one's looks are suddenly changing dramatically as in the case of the pubertal girls. For pubertal boys, whose looks are also changing, we are suggesting that looks assume less importance in the total evaluation of the self. Secondly, we propose that the nature of the body-image change is quite different for boys than for girls. Girls develop a figure which makes them look qualitatively different from themselves as children. Boys, on the other hand, primarily become taller and more muscular and athletic-looking, a change less dramatically different and a change in line with previous values placed on athletics and body-strength. In fact, our data indicate that boys place greater value on sports than girls ($r = .28$; $p < .001$), and that pubertal boys are happier than other boys with their muscle development ($r = .15$; $p < .05$) and rate themselves better at sports.

For pubertal boys then, who are becoming more muscular looking, the improvement in their own appearance is probably obvious. In contrast, for pubertal

¹⁷ A series of questions was included asking students how much they valued certain areas, e.g., looks, being liked by peers of the same sex, being good at sports, etc. The questions read "How much do you care about _____? Very much/Pretty much/Not very much/Not at all."

¹⁸ The significance levels for differences between boys and girls in seventh grade are based on the correlations between sex and the value in question. The significance levels reported for changes in values are based on the F-test of the regression coefficient attached to sex in the relevant regression equation.

girls, it may not be clear whether their particular figure development makes them better or worse looking than their peers, many of whom are also developing figures. Their relative standing in looks may have been clearer at an earlier stage when no one had a figure.

In sum, we are suggesting (1) that girls are more likely than boys to use a new set of values to rate themselves and (2) that their standing in these areas is likely to be ambiguous (particularly if their environment, body-type, and social behavior has changed) and, therefore, they are likely to have low self-esteem.

Sexual Pressure

Are there other reasons why pubertal girls react negatively to early dating whereas pubertal boys do not? Why in fact do pubertal girls seem to react more negatively than nonpubertal girls to dating? It is possible that developed girls who have started to date may be under different pressures than less developed girls who are dating. Sexual pressures from their male partners may be more of an issue for the developed than the undeveloped girls and they may find such sexual pressure stressful and challenging for the self-picture. Pubertal boys, of course, would not be expected to be under such external pressure.

While we unfortunately have no measure of sexual activity or of discomfort attached to sexual activity for the total sample, there are two sources of information which seem to lend some indirect support for such a hypothesis. First, we do know whether the girl has a special boyfriend or not and we can surmise that girls with boyfriends are more likely than others to be involved in sexual behavior. The data show that developed (pubertal) girls are more likely than less developed girls to have a boyfriend (46% vs. 33%, $p = .05$). Whatever positive benefits boyfriends may have for the self-esteem of later adolescents (see Douvan and Adelson, 1966:215-6), at this age only 22% of girls with special boyfriends have high self-esteem in contrast to 32% of girls without special boyfriends.

Secondly, in order to obtain more in-

sight into this problem, we conducted in-depth interviews two years later with five ninth-grade junior high girls who, in seventh grade, had shown this combination of low self-esteem, early dating, and early physical maturity. Although there are far too cases to warrant firm conclusions, these exploratory interviews were congruent with the hypothesis that early sexual encounters were stressful for such girls. For example:

First girl:

Interviewer: What about dating, not steady [in seventh grade]?

Girl: Well, I shouldn't of did it. I didn't like it.

Interviewer: Why didn't you like it?

Girl: Because I always thought to myself, "Oh, I'm old enough to go out with a guy." But I wasn't. I didn't know anything. I was stupid.

Interviewer: Well, what kinds of problems were there that you thought you were stupid in terms of handling?

Girl: Well, I don't like a guy trying to touch me and that's what they tried to do.

Second girl:

Interviewer: . . . First of all, were you meeting boys or going out with boys at that age?

Girl: Yeah, I was meeting guys, and then going out roller skating and stuff . . . I'd always go with a group. I find that I do feel more comfortable when I'm with a group . . . My main reason is because, the reason I don't want to be with just one boy is because like I said, I don't know what to talk about. And I'm not the kind who likes to hold hands all the time. I've got to be free, you know? And there's some guy the other night that was wanting me to sit down and I wouldn't. I mean, not me, I mean I'm a happy person, I guess. I feel happy, and the only way I can keep feeling happy that way is if the guy doesn't want to hold my hand, and I don't really like to be kissed, you know.

Interviewer: You feel that's not where the boys are? They do want to hold hands and kiss you?

Girl: Yeah. That's what happened

when, like I told you, [I went out with] my brother and his girlfriend [and a guy] and, well, they were kissing up in front, and he wanted to; I didn't. So I faked sleeping which I shouldn't of did cause he caught me.

Thus, while we cannot answer all the questions these data raise, it is likely that part of the answer to these questions lies in the different value systems emerging in adolescence between the sexes and the differences in heterosexual treatment of the more vulnerable pubertal, dating girls (girls whose physical maturity is in advance of their emotional maturity).¹⁹

CONCLUSION

The life-course necessarily presents individuals with several major role-transitions, some of which coincide with periods of significant physiological change. The movement into early adolescence is one such role-transition; and in our earlier studies of children from age 8 to 18, early adolescence was identified as a particularly stressful time for one key aspect of mental health—that is, for the self-image. The current study has continued to explore the impact of this role-transition for self-esteem with the aim of further specifying the types of children who are most vulnerable. With repeated survey interviews, seven-hundred and ninety-eight school children were followed from sixth to seventh grade.

The main findings from this study document the importance of social structure and social context for mental health. That is, in terms of their self-esteem, white adolescent girls who have entered the new environment of junior high school are at a clear disadvantage in comparison

both to boys in general and also to those girls who do not have to change schools in seventh grade. When the entrance into adolescence is sudden and discontinuous (see Benedict, 1954), girls appear to have more difficulty in adjustment. The clearest finding of this study, then, is that girls who have entered junior high school are at greater risk for negative self-esteem than are other types of children. In addition, the data suggest that this risk is further increased for girls who have experienced other major life-changes early (changes which their peers have yet to undergo)—e.g., those girls who have not only experienced the *environmental* discontinuity of junior high school, but also the early *physiological* transformations of puberty and the new *social* behavior of dating. According to the data, one reason for the differential reaction of girls and boys to these environmental and other changes may be that, in early adolescence, girls' values are shifting more fundamentally than are those of boys.

Whether the vulnerability evidenced by these early adolescent girls is merely a temporary reaction to the difficulty of coping with multiple, simultaneous changes or whether these same girls will remain at risk in later years is a question that can be answered only by future research. To many developmental theorists (Erikson, 1968; Levinson, 1977), certain periods of personal turmoil are beneficial to long-term adjustment because they allow a more thorough exploration of alternatives for the self as well as for a higher level of re-integration. Without such a re-integration, the problems posed by future life-stages may become more difficult to handle and mental health may become more problematic. Thus, in this view, early adolescent turmoil is important for the self-picture and for adjustment in the next stages of life. However, a contrary view holds that many individuals are weakened by stress and thereby become less capable of dealing with the subsequent life-challenges (see Anthony, 1969). The long-run impact of self-esteem disturbance at the point of transition from childhood into adolescence remains to be investigated. In the meanwhile, the current data emphasize the importance of en-

¹⁹ It is possible that girls who date early and find such dating stressful in early adolescence, may nevertheless find their experience an advantage in late adolescence. At this early age, however, there is no delayed advantage to the self-esteem from dating experience. That is, girls who have begun dating in sixth grade, and continued to date, have no higher self-esteem a year later in seventh grade than girls who have started to date in seventh grade. Both of these groups of early daters have lower self-esteem than girls who have never dated.

vironmental context to the individual's ability to cope with a major role-transition.

REFERENCES

- Anthony, E.
1969 "The mutative impact on family life of serious mental and physical illness in a parent." *Canadian Psychiatric Association Journal* 14:433-53.
- Benedict, R.
1954 "Continuities and discontinuities in cultural conditioning." Pp. 142-8 in W. E. Martin and C. B. Stendler (eds.), *Readings in Child Development*. New York: Harcourt, Brace and Jovanovich.
- Blos, P.
1962 *On Adolescence: A Psychoanalytic Interpretation*. New York: Free Press.
- Blyth, D. A.
1977 *Continuities and Discontinuities During the Transition into Adolescence: A Longitudinal Comparison of Two School Structures*. Ph.D. dissertation, Department of Sociology, University of Minnesota.
- Blyth, D. A., R. G. Simmons, R. A. Bulcroft, E. F. Van Cleave and D. Mitsch Bush
In "Pubertal development in different school settings: a longitudinal analysis of early maturers." *Research in Community and Mental Health: An Annual Compilation of Research*, Vol. 2. Greenwich, Conn. JAI Press.
- Bock, R. D.
1975 *Multivariate Statistical Methods in Behavioral Research*. New York: McGraw-Hill.
- Bohan, J. S.
1973 "Age and sex differences in self-concept." *Adolescence* 8:379-84.
- Bohrnstedt, G. W.
1969 "Observations on the measurement of change." Pp. 127-59 in E. F. Borgatta (ed.), *Sociological Methodology*. San Francisco: Jossey-Bass.
- Bush, D. E., R. G. Simmons, B. Hutchinson, and D. A. Blyth
1977- "Adolescent perception of sex roles in 1968
1978 and 1975." *Public Opinion Quarterly* 41:459-74.
- Clausen, J. A.
1975 "The social meaning of differential physical and sexual maturation." Pp. 25-47 in S. E. Dragastin and G. H. Elder, Jr. (eds.), *Adolescence in the Life Cycle: Psychological Change and Social Context*. New York: Wiley.
- Crowne, D. and D. Marlowe
1964 *The Approval Motive*. New York: Wiley.
- Douvan, E. and J. Adelson
1966 *The Adolescent Experience*. New York: Wiley.
- Elkin, F. and W. A. Westley
1955 "The myth of adolescent culture." *American Sociological Review* 23:680-3.
- Engle, M.
1959 "The stability of the self-concept in adolescence." *Journal of Abnormal and Social Psychology* 58:211-5.
- Erikson, E. H.
1968 *Identity: Youth and Crisis*. New York: Norton.
- Faust, M. S.
1960 "Developmental maturity as a determinant in prestige of adolescent girls." *Child Development* 31:173-84.
- Ford, R. N.
1950 "A rapid scoring procedure for scaling attitude questions." *Public Opinion Quarterly* 14:504-32.
- Freud, A.
1958 "Adolescence." *Psychoanalytic Study of the Child* 13:255-78.
- Grinker, R. R., Sr., R. R. Grinker, Jr. and J. Timberlake
1962 "A study of 'mentally healthy' young males (hemocliters)." *American Medical Association Archives of General Psychiatry* 6:405-53.
- Hall, G. S.
1904 *Adolescence*. (2 vols.) New York: Appleton.
- Hathaway, S. R. and E. D. Monachesi
1963 *Adolescent Personality and Behavior: MMPI Patterns*. Minneapolis: University of Minnesota Press.
- Jessor, S. L.
1977 "A social-psychological perspective on sexual attitudes and behavior in high school youth." Paper presented at the Society for Research in Child Development meetings, New Orleans.
- Jöreskog, K. G. and M. van Thillo
1973 "LISREL: a general computer program for estimating a linear structural equation system involving multiple indicators of unmeasured variables." *Research Bulletin* 72-56, Educational Testing Service, Princeton, New Jersey.
- Jorgensen, E. G. and R. J. Howell
1969 "Changes in self, ideal-self correlations from ages 8 through 18." *Journal of Social Psychology* 79:63-7.
- Katz, P. and E. Zigler
1967 "Self-image disparity: a developmental approach." *Journal of Personality and Social Psychology* 5:186-95.
- Kohn, M. L.
1976 "Looking back—a 25-year review and appraisal of social problems research." *Social Problems* 24:94-112.
- Levinson, D. J.
1977 "The mid-life transition: A period in adult psychosocial development." *Psychiatry* 40:99-112.
- Long, B. H., R. C. Ziller and E. H. Henderson
1968 "Developmental changes in the self-concept during adolescence." *School Review* 76:210-30.
- Maccoby, E. E. and C. N. Jacklin
1974 *The Psychology of Sex Differences*. Stanford: Stanford University Press.

- Mussen, P. H., J. J. Conger and J. Kagan
1969 *Child Development and Personality*. 3rd ed. New York: Harper and Row.
- Offer, D.
1969 *The Psychological World of the Teenager*. New York: Basic Books.
- Offer, D. and K. I. Howard
1972 "An empirical analysis of the Offer self-image questionnaire for adolescents." *Archives of General Psychiatry* 27:529-33.
- Piers, E. V. and D. B. Harris
1964 "Age and other correlates of self-concept in children." *Journal of Educational Psychology* 55:91-5.
- Reynolds, E. L. and J. V. Wines
1948 "Individual differences in physical changes associated with adolescence in girls." *American Journal of Diseases in Children* 75:329-50.
1951 "Physical changes associated with adolescence in boys." *American Journal of Diseases in Children* 82:529-47.
- Rosenberg, F. and R. G. Simmons
1975 "Sex differences in the self-concept in adolescence." *Sex Roles: A Journal of Research* 1:147-59.
- Rosenberg, M.
1965 *Society and the Adolescent Self-Image*. Princeton: Princeton University Press.
- Rosenberg, M. and R. G. Simmons
1972 *Black and White Self-Esteem: The Urban School Child*. Washington, D.C.: American Sociological Association.
- Schuessler, K.
1971 *Analyzing Social Data: A Statistical Orientation*. Boston: Houghton Mifflin.
- Seidman, J. J. (ed.)
1960 *The Adolescent*. New York: Holt, Rinehart and Winston.
- Simmons, R. G.
1978 "Blacks and high self-esteem: a puzzle." *Social Psychology* 41:54-7.
- Simmons, R. G., L. Brown, D. Bush and D. A. Blyth
1978 "Self-esteem and achievement of black and white early adolescents." *Social Problems* 26:86-96.
- Simmons, R. G. and F. Rosenberg
1975 "Sex, sex-roles and self-image." *Journal of Youth and Adolescence* 4:229-58.
- Simmons, R. G., F. Rosenberg and M. Rosenberg
1973 "Disturbance in the self-image at adolescence." *American Sociological Review* 38:553-68.
- Smith, W. D. and D. Lebo
1956 "Some changing aspects of the self-concept of pubescent males." *The Journal of Genetic Psychology* 88:61-75.
- Stolz, H. R. and L. M. Stolz
1951 *Somatic Development of Adolescent Boys*. New York: Macmillan.
- Tanner, J. M.
1961 *Growth at Adolescence*, 2nd ed. Oxford: Blackwell Scientific Publications.
1971 "Sequence, tempo, and individual variation in the growth and development of boys and girls aged twelve to sixteen." *Daedalus* 4:907-30.
- Weiner, I. B.
1970 *Psychological Disturbance in Adolescence*. New York: Wiley.
- Wells, L. E. and G. Marwell
1976 *Self-Esteem: Its Conceptualization and Measurement*. Beverly Hills, Calif.: Sage.
- Wylie, R. G.
1974 *The Self-Concept: Volume I, A Review of Methodological Considerations and Measuring Instruments* (rev. ed.) Lincoln, Nebr. University of Nebraska Press.

TEMPORAL CHANGES IN WORK CONTENT*

KENNETH I. SPENNER

Center for the Study of Youth Development, Boys Town

American Sociological Review 1979, Vol. 44 (December):968-975

Hypotheses about temporal changes in work content over the past century include notions of the upgrading, downgrading, and no-change in skill requirements over time. Current evidence is limited largely to case studies. Analytically, two types of change underlie aggregate variations in skill requirements: change in the distribution of workers in jobs and actual change in the content of jobs. Recent research for the first type of change in the American economy suggests a modest skill downgrading since 1900. Using data from two consecutive editions of the *Dictionary of Occupational Titles* for a sample of jobs, I present new evidence that shows small variations for the second type of change for the last 10-12 years. There has been a slight upgrading in skill requirements in several sectors of the labor force.

Three arguments have been made about the temporal continuity of work quality in recent history.

The conventional *upgrading* thesis suggests the effects of technological change and, more generally, the effects of industrialization increase the aggregate level and range of skills in the occupational structure (Kerr et al., 1960). The main mechanisms include the increased complexity of work in high technology fields and the increased interdependence of work. Workers experience less supervision and routinization as a function of improvements due to automation.¹ The steady increase in educational credentials in recent years is often used to support the upgrading hypothesis, but this type of evidence is not without limitations (Braverman, 1974:424-9).

According to the *downgrading* hypothesis, the quality of work—assessed by the required levels of skill, training, complexity, and autonomy—has decreased over

the course of this century. Rather than viewing technology as an autonomous force that eliminates routinized work, technology is viewed as an instrument of capitalist production. The logic of capitalism, through devices such as scientific management, numerical control, and the redesign of jobs, lowers the value of labor and dilutes forms of knowledge and skills, such as might be found in craft occupations. The result is a growing mass of unskilled and semiskilled workers, particularly in lower white-collar or clerical fields. Braverman (1974; also, see Bright, 1958; 1966) provides a rich argument in this vein, and marshals an array of supporting case-study evidence.

Finally, there are those who argue there has been very little or no change in the aggregate skill requirements of work (Horowitz and Herrenstadt, 1966). One version of the *no-change* hypothesis suggests that some sectors of the occupational structure have experienced upgrading, others downgrading, and the net change is likely small (Hall, 1975:314-55).

In sum, there are three hypotheses about temporal changes in work content. The arguments are extensive, and with one or two exceptions, a large body of case studies (of select industries or jobs for a single firm or area, for a brief period of history) has been used to support one or more of the positions. No attempt has been made to judge this voluminous body of literature. A fair conclusion is difficult to achieve owing to issues of inclusiveness, noncomparability, and variations in temporal, geographic and population

*Address all communications to: Kenneth Spenner; Center for the Study of Youth Development; Boys Town, NE 68010.

Support for this research was provided by the Research Computing and Library Services Divisions of the Center for the Study of Youth Development, Boys Town, Nebraska. I acknowledge the comments and assistance of L. B. Otto and H. K. Vandegrift.

¹ Further information on this position and the larger debate can be found in: *Work in America* (Report to the Secretary of HEW, 1973), *Technology and Work*, (Harvard University Program on Technology and Society, 1969), or *The Employment Impact of Technological Change* (National Commission on Technology, Automation and Economic Progress, 1966).

coverage. These limitations are outlined later.

METHODOLOGICAL ISSUES: NEW EVIDENCE FOR TYPES OF CHANGE

Aggregate variations in the content of work can be generated by two different types of change. First, the overall level of skill required in the economy can vary as a function of changes in the marginal distribution of workers to jobs. For example, an influx of workers into routinized clerical jobs would decrease overall skill levels as more workers are exposed to a lower average level of complex work. This type of effect could operate independently of the second type of change, which is an actual change in the content of jobs apart from the numbers of workers in them. The forces generating within-job change may be empirically quite different from the forces that change the marginal distributions. Moreover, singular judgment on the validity of upgrading, downgrading, and no-change hypotheses is inappropriate as the types of change may operate in opposite directions. There is some indication that this may be the case.

In a recent paper, Dubnoff (1978) reports on interoccupational shifts and changes in the quality of work in the American economy from 1900 to 1970. Using temporally constant measures of work content (U.S. Department of Labor, 1965) Dubnoff assesses decennial changes in the distribution of workers to levels of complexity using indicators for work involvement with data, people, and things. The method assumes temporally constant work content for job categories and, therefore, measures only the first type of marginal change. For the total labor force, Dubnoff finds evidence of a steady downgrading for level of involvement with data. The change is largely at the expense of females in the nonmanual sector of the labor force. Level of involvement with people shows very little overall change, but females in the nonmanual sector experience a sharp downgrading of interpersonal complexity of work as a function of their changing or new-found occupational locations. Finally, complexity of involvement with things shows a modest

downgrading in the aggregate over the 70-year period. Work with things shows an upgrading for both gender groups in the nonmanual sector and a downgrading for both groups in the manual sector. Again, these patterns reflect only changes in the distribution of workers to jobs, not changes in job content. In sum, there is support for Braverman's argument using changes in marginal distributions, although most of the downward shifts are due to movements out of farming and growth of the female dominated clerical sector. Other sector-gender comparisons show stability or slight upward shifts in skill requirements.

Change in the actual content of work is more difficult to assess. It requires independent, multiple point in time measures of criterion variables for a large sample of jobs in the American economy.² The complexity of the comparison is compounded by issues of appropriate criterion variables and the comparability of job classification systems. Only one study could be located that has some of the requisite features. Horowitz and Herrenstadt (1966) draw upon a selective sample of jobs from several industries from the 2nd (1949) and 3rd (1965) editions of the *Dictionary of Occupational Titles* (DOT). Their study uses a number of work characteristics that were scored for DOT jobs in each edition. Three production industries (slaughtering and meat packing, rubber tires and tubes, and machine shop trades) and two service industries (medical services and banking) were the subject of investigation for the 15-year period between DOT editions. Horowitz and Herrenstadt conclude that there has been very little, if any, consequential change in overall skill levels for the period under study (mid-1940s to early 1960s).³

² Among the indicators for the skill requirements or content of work are: complexity, autonomy, routinization, closeness of supervision, levels of involvement with data, people, and things, authority, control over the pace of work, physical demands of work, and working conditions.

³ Of this study, Braverman (1974:213) writes:

It is an attempt to assess "worker characteristics required of the changing jobs" entirely on the basis of the descriptions of "job content" in the . . . *Dictionary of Occupation Titles*. . . . A more arid and unrewarding exercise can hardly be

While limited in time and criterion variables, the Horowitz and Herrenstadt (1966) study is noteworthy in its rigor and in its attempt to include more than a single industry or occupation. Additionally, it provides an assessment of change in work content net of the marginal distributions of workers in jobs.

CONCEPT AND METHOD OF A NEW COMPARISON

By level of skill I mean the degree of mental, interpersonal, and manipulative complexity inherent in a job. The skill levels of jobs in industrial societies provide differential remuneration and occupational rewards, and vary in the required kinds of credentials, experience and training that permit holding the job (see Bright, 1966, for a related typology). Over time, the level of complexity inherent in work likely changes due to larger sociological processes such as automation and technical change, and the instrumental devices of capitalist production such as scientific management, numerical control and the redesign of jobs.

With the recent release of the 4th edition of the DOT (1977), it is possible to extend the earlier study by Horowitz and Herrenstadt to include a larger portion of the labor force and a more recent time period. The extension is important for two reasons. First, it brings the time period covered by empirical evidence a step closer to the scope of the hypotheses. Second, while the data are admittedly limited, they are the only available data with which to assess actual changes in the content of work, net of the distribution of workers for the entire United States economy.

imagined, and the result is that after scores of pages of meticulous tabulations and statistics, the authors conclude that "the overall net change in the skill requirements during these fifteen years was 'remarkably small.'"

"Arid" and "unrewarding" do not constitute sufficient grounds for dismissing the study. It is an oversimplification to say the ratings are "entirely on the basis of the descriptions of 'job content,'" owing to the over 75,000 field validations of the ratings. The issue is not so much the basis of the ratings, as it is their (largely unknown) accuracy (see Spenner, 1980).

The 3rd edition of the DOT contains about 13,800 uniquely defined titles. Each job was scored by occupational analysts at the Department of Labor on levels of involvement with data, people, and things. The scale values and definitions appear in the Appendix. These scores were validated against *in situ* samplings of the more populous 4,000-5,000 jobs. The variables are taken here as indicators of levels of complexity of work with the three functional foci.⁴

The 4th edition of the DOT (1977) added over 2,000 job definitions, and some 3,500 others were deleted from the 3rd edition. All titles, definitions, and ratings were checked and updated in onsite job evaluations conducted by the Department of Labor.⁵ The major changes between the two editions include the addition, deletion, and adjustment of titles to reflect changes in the occupational structure, and the removal of all gender-specific language in job definitions (e.g., virtually all 3rd edition "foremen" job titles are now "supervisors").

To obtain population estimates of the complexity variables, a 5% (N = 622) random sample of 4th edition titles was drawn. Note that the sample is of jobs in the American economy and not a sample

⁴ These three variables are a limited sampling of skill requirements, and more broadly of work content (see the variables listed in fn. 2). I would expect that the three variables are necessary, but not sufficient or inclusive indicators of the skill content of work. The levels of data, people and things scored for each job refer to the "highest appropriate function in each hierarchy to which the job requires the worker to have a *significant* relationship" (Department of Labor, 1966:649). The measures are more precise than the "highest" level used but probably not as accurate as the "most prevalent" function required on a day-to-day basis. While the DOT was originally designed as an aid to employment agencies, initial evidence on reliability and validity shows that DOT variables may prove quite workable for social research. Evaluative measurement information can be found in Spenner (1977; 1980; also see Kohn, 1969; and Temme, 1975). The comprehensiveness, national scope and multiple time point evaluations of the DOT should be weighted against measurement issues of reliability and validity.

⁵ In theory, the 3rd and 4th editions of the DOT represent completely independent evaluations of jobs. This is probably not the case. Some 3rd edition jobs were checked for accuracy, some fraction were likely unchecked and many others received an independent evaluation.

of individuals in the labor force (see Dubnoff 1978, for evidence on the latter). The sample of jobs purposely is not weighted in order to isolate changes in job content from the number of workers in jobs. Each title (definition) was matched to its 3rd edition equivalent. Each sampled title was also assigned to one of three groups on the basis of the quality of the match between editions: (1) "exact match" (word-for-word congruence between editions; $N = 466$, 75% of total); (2) "approximate match" (two definitions having a clear majority of their verbal content in word-for-word agreement, but with one definition slightly more or less inclusive than the other; $N = 77$, 12% of total); and (3) "no match" (new titles in the 4th edition without analog in the 3rd [including military titles] or instances of a poor match between 3rd edition options for a 4th edition code; $N = 79$; 13% of total).⁶

Table 1 provides the means for levels of work with data, people and things for matched titles. The upper panel shows overall means and standard deviations by match quality; the lower panel reports means for DOT major occupation groups.⁷

A comparison of means and variances for edition-specific variables by exact and approximate match quality shows only one marginally significant difference. In the 3rd edition, level of involvement with things is somewhat higher ($p = .051$) for exact match jobs compared with approx-

imate matches. The null hypothesis of no difference by match quality cannot be rejected in all other comparisons. Hence, the quality of job match between editions will not affect the inferences. In the remainder of this report, the two groups are combined ($N = 543$).

The major trend in the table shows that the levels of work with data, people and things have become more complex over the last ten to 15 years. I have avoided, and the reader is cautioned against, treating the same score across scales as equivalent. In this paper the measures are treated separately. Taken as three separate comparisons, in each case the level of complexity is slightly upgraded *and* the number of jobs upgraded exceeds the number that were downgraded. These changes represent from 1/7 to 1/4 of a standard deviation in the respective distributions.

Repeated measures analysis of variance can be used to detect mean differences on a trial factor (3rd-4th editions) and to show the labor force sector location of the change on a categorical factor (DOT major occupation group). Overall mean differences in complexity levels are significant well beyond conventional levels (for data, $F_{1,534} = 26.99$, $p < .001$; for people, $F_{1,534} = 83.47$, $p < .001$; for things, $F_{1,534} = 32.98$, $p < .001$). Comparison of no match titles in the 4th edition (which largely reflects new jobs in occupational structures) with matched titles shows no change for work with things, a small upgrading for work with data (not significant), and a significant upgrading for work with people ($p = .038$). In contrast to much of the popular speculation on the topic, new jobs in the economy during this period show no massive overall upgrading in these skill requirements compared with existing jobs, particularly for work with data and things.

In the lower panel in Table 1, the main effect for rows or DOT major occupation groups is significant since there is substantial variation in the levels of involvement by sector of the labor force. The trial factor by categorical factor interaction, interpreted as differential change in the level of complex work by sector of the labor force, is not significant ($p = .145$) for

⁶ All titles were coded twice under blind conditions. Intercode agreement on the DOT code and match quality code was 99% for titles eventually designated as exact matches. Intercode agreement on titles eventually designated as approximate and no match was 87%. In virtually all cases, the disagreement was resolved in locating an exact or approximate match for a title designated no match by one coder. One coder had substantially more DOT coding experience that proved the difference. An analysis check shows the distribution of match quality is random across aggregations of DOT jobs (i.e., by DOT major occupation groups, $F_{8,534} = 1.13$, $p = .338$).

⁷ In the 4th edition of the DOT the No Significant Relationship levels for each variable were eliminated on the grounds that all jobs have at least a minimum level of activity with respect to each of the functional foci. To afford metric comparability between editions, for data, 7's and 8's were recoded to 6's (Comparing), for people, 8's were left unchanged as this level was relabeled to Taking Instructions-Helping, and for things, 8's were recoded to 7's (Handling).

Table 1. Means for Third and Fourth Edition Level of Work with Data, People, and Things (by Match Quality and DOT Major Occupation Group)

A. Overall Comparisons	N	3rd Edition ¹		4th Edition	
		\bar{x}	s.d.	\bar{x}	s.d.
Data—Exact Match	466	4.20	2.16	3.87	2.07
Data—Approx Match	77	4.29	2.11	3.94	2.06
Data—Both	543	4.21	2.16	3.88	2.06
People—Exact Match	466	7.17	1.81	6.74	1.79
People—Approx Match	77	7.03	1.84	6.64	1.81
People—Both	543	7.15	1.81	6.73	1.79
Things—Exact Match ²	466	4.21	2.37	3.94	2.34
Things—Approx Match	77	4.79	2.38	4.31	2.35
Things—Both	543	4.30	2.38	3.99	2.34

B. Subgroup Comparisons (Exact + Approximate Match, N = 543)

	Data 3	Data 4	People 3	People 4	Things 3	Things 4			
Professional, Technical & Managerial (65)	1.08	1.00	5.66	**†	5.12	5.26 **	4.71		
Clerical & Sales (41)	3.27	3.12	6.49	**	6.20	6.80 ***†	5.61		
Service (28)	4.18	**	3.75	6.57	**	6.07	5.71	5.61	
Agriculture, Fishing & Forestry (12)	3.67	3.83	6.58	**	6.00	4.83	*	4.25	
Processing (126)	5.41	4.83	7.52	***†	7.00	4.42	**	4.18	
Machine Trades (96)	4.90	***†	4.44	7.74	**	7.36	2.97	2.94	
Bench Work (94)	4.53	4.48	7.63	**	7.44	3.68	3.62		
Structural Work (40)	4.43	*	4.20	7.55	***†	6.93	3.30	3.18	
Miscellaneous (41)	4.10	***†	3.37	6.73	**	6.29	4.24	**	3.63

¹ All differences between 3rd-4th edition means are significant at $p < .001$.

² Only for 3rd edition Things is difference between exact and approximate match significant at $p = .051$.

* Difference between paired means significant at $p < .05$.

** Difference between paired means significant at $p < .01$.

† Difference between paired means significant at $p < .05$ under F adjusted for all comparisons (Sheffé procedure).

people, and is significant at conventional levels for data and things, but is small in size in each case.

An inspection of paired mean comparisons clarifies the overall effects. On the one hand, the upgrading in level of involvement with people is uniform across sectors. On the other hand, the upgrading for involvement with data is specific to service, machine trades, and miscellaneous jobs, which are a minority of the labor force. For level of work with things, the change occurs largely in professional, technical, managerial, clerical, sales, processing, and miscellaneous jobs. If the much more conservative Sheffé procedure is used (see Winer, 1971:170-204, 514-32), which controls the overall likelihood of Type I error across all comparisons, there are a few remaining significant differences. But given the limits of this test, the evidence is uniform and clear: there is no evidence for the mean

downgrading of the skill requirements of work. Rather, the data for the time period under consideration show no change or, if any, a slight upgrading in levels of involvement with data, people, and things. I would hesitate to choose between the no-change and upgrading hypotheses, other than to note that, on balance, the upgrading receives more support than the no-change hypothesis.

There are several threats to the validity of this conclusion, even for the limited time period in question. First, the scales of measurement may be distorted and do not reflect interval or ordinal properties (Scoville, 1972). Yet these scales do correlate well with other variables often taken as indicators of the skill content of work, including General Educational Development, Specific Vocational Preparation, substantive complexity, levels of routinization and closeness of supervision (Spencer, 1980). Additionally, the

analysis was redone with the original skill levels collapsed to a dichotomy. The conclusions do not change; the net upgrading exceeds downgrading (people and things) or there is no appreciable change (data).

Second, suppose the three variables contain various forms of random measurement error. While this possibility cannot be ruled out, since the measurement properties of DOT variables are largely unknown (see Spenner, 1980, for some initial evidence), estimates of means are unbiased with respect to random measurement error.

Third, mean differences may be due to changes in the coding procedures between the 3rd and 4th editions. For example, the elimination of no relationship categories in the 4th edition might result in jobs coded in these categories in the 3rd edition being disproportionately upgraded in the new edition. When jobs coded no relationship in the 3rd edition are removed from the analysis, the evidence for data and people deteriorates (to show no net change). For involvement with things, the evidence becomes slightly stronger in favor of the upgrading hypothesis. Thus, the upgrading in data and people in Table 1 reflects either (a) the change in coding procedures between editions, or (b) true upgrading that disproportionately occurs in jobs coded no relationship in the 3rd edition. Present data do not permit choosing between these two options. But the original conclusion of no-change or slight upgrading across the three skill arenas remains unchanged.

Finally, suppose the DOT analysts implicitly harbored an upgrading hypothesis and nonrandomly upgraded a large number of jobs. The hypothesis cannot be ruled out on the basis of evidence in hand. However, a massive bias of this sort is difficult to imagine due to the large number of analysts spread across multiple field centers in all parts of the country. Moreover, if such a bias is operating to any appreciable extent, then it should involve a modest number of DOT jobs that show at least a one-scale point upgrading in scores between editions. To the contrary, the vast majority of sample jobs are unchanged in data, people and things scores between the editions (81, 77, and

87%, respectively). In fact, 2-4% of sample jobs showed downgrading on one of the dimensions.

DISCUSSION

Hypotheses about changes in the content of work for the American economy have been the subject of substantial debate in recent years. Each of the traditions has marshaled a rich body of case studies in its support (Braverman, 1974; Report to the Secretary of HEW, 1973).

Analytically, two types of change underlie overall aggregate variations in skill levels: change due to variations in the marginal distribution of workers to jobs, and change due to true variation in the work content of jobs. Recent evidence (Dubnoff, 1978) suggests changes in the distribution of workers to jobs, including sector specific growth in the labor force, have resulted in a modest net downgrading of skill requirements since 1900. Evidence presented here, in conjunction with one of the more inclusive studies of the past, suggests very little change, if any a slight upgrading, in the actual skill content of work over the last quarter century.

But the test of the hypotheses for the latter type of change is a weak test rather than a strong test. The limitations are not those of ideas or method but are limitations of available data for the entire labor force over a long period of time. Only a limited part of the conceptual domain of skill requirements, levels of work involvement with data, people, and things, for a short span of history (the last 10-12 years), was examined. Rather than being definitive, the outcomes reported here are best viewed as but one piece of a much larger puzzle of evidence. More precise choice among the alternate hypotheses requires an expanded design with multiple indicators for skill content independently assessed for a large sample of jobs at regular intervals over 30-, 40- or 50-year periods.

In sum, the comparison of consecutive editions of the DOT provides a piece of evidence to further inform an ongoing debate. The issue is complex both in concept and measure. If the DOT is used and is assumed valid then this type of evidence

for recent years shows no support for the downgrading hypothesis. The potential problems with using the DOT for research purposes, such as its unknown reliability and validity, have been mentioned; but the DOT is what is currently available and it seems better to use it carefully than not to use it.

APPENDIX

RELATIONSHIPS TO DATA, PEOPLE AND THINGS
(U.S. Department of Labor, 1965:649-50; 1977:1369-71)

Data refers to "information, knowledge and conceptions related to data, people or things, obtained by observation, investigation, interpretation, visualization, mental creation; incapable of being touched; written data take the form of numbers, words, symbols; other data are ideas, concepts, oral verbalization."

People refers to "human beings; also animals dealt with on an individual basis as if they were human."

Things refers to "inanimate objects as distinguished from human beings; substances or materials; machines, tools, equipment; products. A thing is tangible and has shape, form, and other physical characteristics."

Data	People	Things
0 Synthesizing	0 Mentoring	0 Setting up
1 Coordinating	1 Negotiating	1 Precision working
2 Analyzing	2 Instructing	2 Operating-Controlling
3 Compiling	3 Supervising	3 Driving-Operating
4 Computing	4 Diverting	4 Manipulating
5 Copying	5 Persuading	5 Tending
6 Comparing	6 Speaking-Signaling	6 Feeding-Offbearing
7 No Significant Relationship	7 Serving	7 Handling
8 No Significant Relationship	8 No Significant Relationship	8 No Significant Relationship

In the 4th edition, level 6 (Comparing) is the lowest for Data, level 8 (renamed "Taking Instructions-Helping") is the lowest for People, and level 7 (Handling) the lowest for Things. All other definitions are intact between editions. Detailed definitions of each level for each dimension can be found in either edition of the *Dictionary*.

REFERENCES

- Braverman, Harry
1974 *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*. New York: Monthly Review Press.
- Bright, James R.
1958 "Does automation raise skill requirements?" *Harvard Business Review* 36:85-98.
1966 "The relationship of increasing automation and skill requirements." Pp. 203-21 in National Commission on Technology, Automation, and Economic Progress, the Employment Impact of Technological Change, Appendix, Vol. II to Technology and the American Economy. Washington, D.C.: U.S. Government Printing Office.
- Dubnoff, Steven
1978 "Inter-occupational shifts and changes in the quality of work in the American economy, 1900-1970." Paper presented at the annual meeting of the Society for the Study of Social Problems, San Francisco.
- Hall, Richard H.
1975 *Occupations and the Social Structure*. 2nd ed. New York: Prentice Hall.
- Harvard University Program on Technology and Society
1969 *Technology and Work*. Cambridge, Mass. Harvard University Press.
- Horowitz, Morris and Irwin Herrenstadt
1966 "Changes in skill requirements of occupations in selected industries." Pp. 223-87 in National Commission on Technology, Automation, and Economic Progress, The Employment Impact of Technological Change, Appendix, Vol. II to Technology and the American Economy. Washington, D.C.: U.S. Government Printing Office.
- Kerr, Clark, John T. Dunlop, Frederick Harbison, Charles A. Myers
1960 *Industrialism and Industrial Man*. New York: Oxford University Press.
- Kohn, Melvin L.
1969 *Class and Conformity*. New York: Dorsey Press.
- National Commission on Technology, Automation and Economic Progress
1966 *The Employment Impact of Technological Change*. Appendix, Vol. II to Technology and the American Economy. Washington, D.C.: U.S. Government Printing Office.
- Report to the Secretary of Health, Education and Welfare
1973 *Work in America*. Cambridge, Mass.: M.I.T. Press.
- Scoville, James G.
1972 *Manpower and Occupational Analysis: Concepts and Measurements*. Lexington, Mass.: Lexington.
- Spencer, K. I.
1977 *From Generation to Generation: The Transmission of Occupation*. Ph.D. disser-

- tation, Dept. of Sociology, University of Wisconsin-Madison.
- 1980 "Occupational characteristics and classification systems: new uses of the Dictionary of Occupational Titles in social research." *Sociological Methods and Research*. Forthcoming.
- Temme, Lloyd V.
1975 *Occupation: Meanings and Measures*. Washington, D.C.: Bureau of Social Science Research.
- U.S. Department of Labor
1965 *Dictionary of Occupational Titles*. 3rd ed., Vol. 1-2. Washington, D.C.: U.S. Government Printing Office.
1977 *Dictionary of Occupational Titles*. 4th ed. Washington, D.C.: U.S. Government Printing Office.
- Winer, B. J.
1971 *Statistical Principles in Experimental Designs*. 2nd ed. New York: McGraw-Hill.

WHITE MOVEMENT TO THE SUBURBS: A COMPARISON OF EXPLANATIONS*

HARVEY MARSHALL

Purdue University

American Sociological Review 1979, Vol. 44 (December):975-994

In this study the causes of two aspects of white movement to the suburbs are analyzed: the probability that a white central city resident moved to the suburbs between 1965 and 1970, and the probability that a white in-migrant to metropolitan areas settled in the suburbs. The units of analyses are the 112 metropolitan areas where the central city had a 1960 population of 100,000 or more, and where the central city and the metropolitan area were not coterminous. Primary concern is with determining whether whites were "fleeing" central city problems (such as crime, taxes, strikes, race riots, and large black populations) or were drawn to the suburbs because it is there that new housing and jobs were located. A model of the suburbanization process is explicated and evaluated, using path analysis.

INTRODUCTION

In this paper some of the causes of white population movement to the suburbs are examined. The major goal is synthesis of two hitherto distinct explanatory frameworks: (1) that whites are "fleeing" central cities of large metropolitan areas to avoid a variety of perceived problems, such as civil disorder and high crime rates; (2) that suburbanization reflects white response to characteristics of the spatial structure of met-

ropolitan areas, especially the redistribution of jobs and housing between cities and their suburbs. A model of population suburbanization is specified and evaluated which includes variables from both frameworks. This model provides insight into the underlying dynamics of the process and the importance of different types of variables in relation to one another, as well as the extent to which observed correlations are spurious. For example, while the movement of whites to suburbs is more rapid in metropolitan areas where the central city's crime rates are high or where there have been a number of race riots, it is not clear what portion of these relations are causal or their importance relative to one another.

Two aspects of the redistribution phenomena are analyzed. The first is the probability that white central city residents moved to the suburbs of their metropolitan areas between 1965 and 1970.

*Direct all communications to: Harvey Marshall; Department of Sociology; Purdue University; West Lafayette, IN 47907.

Research supported by Grant RO1-MH28815-01 from the Center for the Study of Metropolitan Problems, NIMH. I would like to thank Jeff Dunlap and Gaye Matthews for assistance in preparation of the data. John Stahura and Martin Patchen also provided invaluable comments on earlier drafts, as did three anonymous reviewers. Of course, I alone am responsible for any remaining ambiguities or errors.

The second is the probability that white in-migrants to metropolitan areas settled in the suburbs rather than the central city during that interval. Of course, these are only two of the components of the overall process of white suburbanization: the more rapid growth of white population outside of central cities. Other aspects are differential mortality and fertility between central cities and their rings, as well as the size of the counterstream from the suburbs to the cities relative to the opposite stream.

A full understanding of the entire process will require separate study of all aspects. Nonetheless, important points of departure are the analysis of movement from cities to suburbs as well as the distribution of in-migrants between central cities and suburbs. These are major components in the complex of factors that are responsible for the more rapid growth of suburban compared with central city populations. Each is conceptually distinct, and consequently may be affected by different variables, or by the same variables in different ways. The units of analysis are Standard Metropolitan Statistical Areas (SMSAs) defined by the Census Bureau in 1960 and 1970, with 1960 central city populations of 100,000 or greater, with exceptions described more fully later.

The study has numerous theoretical and policy implications. The loss of white population has long been regarded as a basic source of the problems experienced by central cities. There appears to be widespread acceptance of the hypotheses that the primary motives of whites locating in suburbs is avoidance of blacks, crime, and civil disorder, yet there has been no attempt to specify a general framework interrelating these variables, either with one another or with structural characteristics of metropolitan areas. In particular, no previous work has systematically examined the hypothesis that the various dimensions of civil disorder may be differently related to white suburbanization, as well as causally connected with crime, black population size, and the structural characteristics. Instead, emphasis within sociology has been on the role of the structural characteristics (e.g.,

Bogue and Harris, 1954; Bradford and Kelejian, 1973; Kain and Niedercorn, 1975; Olsen and Guest, 1977).

THEORY AND HYPOTHESES

Regarding the macrotheory, the general argument can be specified at several levels. The first is that a series of technological and organizational changes, especially since World War II, greatly increased the range of alternatives open to individuals and families about where they can live. Of particular importance has been the spread of highways into the areas surrounding central cities and almost universal ownership of at least one automobile by most American families. Also important are the substantially higher real incomes and the evolution of financial instruments (especially Federal Housing and Veterans Administrations' loan guarantees) which placed ownership of a single family dwelling unit within the reach of virtually the entire middle and much of the working class during the fifties and sixties.

Under these conditions, another set of variables presumably emerged as important. These were aspects of central city life, such as their high crime rates, regarded as unpleasant by whites and which could now be avoided, and the view that whites move to the suburbs for these reasons is a second level of explanation. Moreover, this explanation has emerged as the dominant one in popular treatments of suburbanization in the mass media and even in some more scholarly works.

A third set of variables is the relatively enduring structural characteristics of metropolitan areas. These influence the context within which individuals and builders make decisions about where they will live and where new housing will be located. The roots of these characteristics are in the growth history of the individual metropolis and include the size of the central city, the density at which it is settled, its ability to annex surrounding territory in the course of its development, and the distribution of jobs and housing between central city and suburbs.

Sociologists and economists have tended to focus their research on these structural variables and have paid little attention to such factors as crime and civil disorder. For example, Schnore (1965) suggested that the sheer inability of cities to contain the massive volume of new housing construction in the post-World War II years meant that it had to locate outside of their boundaries, resulting in large-scale suburbanization. One implication is that had cities been able to annex this surrounding territory, the "suburbanization" trend would have been much less pronounced. Others, such as Hoover and Vernon (1962), have emphasized the decentralization of jobs as a major factor attracting people to the suburbs, in addition to the location of new housing there.

It is toward a synthesis of the second and third of these frameworks that this research is directed. The first emphasizes changed transportation systems and credit instruments, and assumes these to be more or less constant across metropolitan areas; that is, individuals and families presumably have equal access to automobiles and loans to buy housing in Indianapolis as they do in Dallas. This is clearly not the case with the second and third types of variables such as central city crime rates and densities, conditions which vary considerably across metropolitan areas at any given point in time.

For convenience, these two classes of variables are classified as "push" and "structural." It is recognized that such factors as crime rates and black population size could be conceptualized as "structural" properties of cities. However, they are less enduring characteristics than, for example, central city densities, in the sense that they are much more amenable to short-term alteration by public policy or other forces. More importantly, this distinction is consistent with the way in which the theoretical questions are formulated. In the following paragraphs bivariate hypotheses are developed, linking each independent variable with white suburbanization, setting the stage for specification of a model within which the role of both frameworks in the suburbanization process can be examined.

Structural Variables

Density (DENSITY60). A theoretically crucial structural variable is the density at which the central city is settled. Not only is density expected to be a major constraint on the location of new housing and jobs, it is also closely associated with its age and reflects the dominant transportation mode in use when the city emerged. Since the type of transportation system fundamentally affected the extent to which jobs and population were initially suburbanized (Wood, 1958; Warner, 1962) and is a persisting characteristic of cities (Duncan et al., 1962; Guest, 1973), it is likely to be closely associated with job and housing suburbanization in 1960. Briefly, cities which emerged before 1890 were extremely compact since virtually everyone had to live within walking distance of their jobs and shopping districts. While the horse-drawn railway, widely adopted during the 1850s, altered the radius of urban settlement somewhat, very high densities prevailed. As late as 1879, for example, the average commute trip in New York City was only one-quarter of a mile (Pred, 1966:209-10).

Introduction of the electric railroad, as Warner (1962) showed in his study of the Boston area, led to rapid decentralization which heavily involved middle-class persons and marked the beginning of status differences between cities and suburbs (cf. Wood, 1958). As Tobin (1976:99) points out: "Urban space was redefined by the introduction and use of electric power by street railways." Automobile use expanded steadily after 1908, the year in which mass production of the Model T was begun. However, it was not until the 1920s that the automobile supplemented the electric railroad and became the dominant constraint in the distribution of population within metropolitan areas (Tobin, 1976:99).

Finally, density is closely related to the type and quality of a city's housing stock. In particular, it is likely to affect the percent of dwelling units built before 1950 (LT50), percent owner-occupied (OWNER60), and percent single family (PCTSINGLE60). While each of these characteristics tap somewhat different

dimensions of the quality of the central city's housing stock, all are expected to influence white decisions about a central city versus a suburban residential site. Population densities of central cities, housing type and quality, and the degree to which population and jobs are suburbanized are consequently intimately bound with one another, and a major question is the extent to which those factors affected further suburbanization in the sixties. (Sources of data and the operational definitions of all variables except RIOTS are given in Table 1.)

Annexation (ANNEX60 and ΔANNEX). Central cities vary considerably in their

ability to extend their political boundaries to contain the expanding urban development on their peripheries, and this may affect their ability to attract and hold whites in two ways: (1) to the extent that the central city contained a substantial portion of the metropolitan area's housing stock in 1960, a larger proportion of in-migrants was likely to settle there; and fewer residents were likely to leave, since they had a wider range of choice within the central city; (2) if the central city were able to annex surrounding territory between 1960 and 1970, similar effects on suburbanization are anticipated.

The first variable (ANNEX60) is de-

Table 1. Operational Definitions of Independent Variables and Sources of Data

1. *DENSITY60*. Population per square mile of the central city in 1960 (U.S. Bureau of the Census, 1962, Table 6).
2. *LT50*. Proportion of all central city dwelling units in 1960 which were built before 1950 (U.S. Bureau of the Census, 1962, Table 6).
3. *PCTSINGLE60*. Proportion of all dwelling units in the central city in 1960 which were single-family dwelling units (U.S. Bureau of the Census, 1962, Table 6).
4. *OWNER60*. Proportion of all central city dwelling units in 1960 which were owner occupied (U.S. Bureau of the Census, 1962, Table 6).
5. *ANNEX60*. Proportion of all dwelling units in the SMSA which were located in the central city in 1960 (U.S. Bureau of the Census, 1962, Tables 3 and 6).
6. *ΔANNEX*. Percent population increase between 1960 and 1970 due to annexation (U.S. Bureau of the Census, 1971, Table B; 1963, Table 20).
7. *NEWDUSUB*. Proportion of all dwelling units in the SMSA built after 1960 which were located in the suburbs (U.S. Bureau of the Census, 1972, Tables 3 and 6).
8. *JOBSUB60*. Proportion of all manufacturing, retail, wholesale, and service jobs in the SMSA in 1960 which were located in the suburbs (outside of the central city, but inside of the SMSA). The number of jobs in 1960 was estimated with a linear interpolation between the 1957 and 1963 census of manufacturing (U.S. Bureau of the Census, 1962, Tables 3 and 6; 1973, Tables 3 and 6).
9. *NEWJOBSUB*. Proportion of all new jobs and services in the SMSA between 1960 and 1967 which were located in the suburbs. The 1960 jobs are the estimates described in fn. 1 above, while the 1967 jobs were taken from Tables 3 and 6 of the 1972 City and County Data Book (U.S. Bureau of the Census, 1972). Of course, this is actually the estimated net gain for the SMSA between 1960 and 1967 since many jobs and services left during the period.
10. *SIZE60*. 1960 total population of the central city (U.S. Bureau of the Census, 1963, Table 20).
11. *REGION*. A dummy variable scored 1 if the SMSA was located in the Southern Census region, 0 if not. The states located in the Southern Census region are: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia.
12. *PCTBLACK60*. Percent of the total central city population in 1960 which was nonwhite (U.S. Bureau of the Census, 1962, Table 6).
13. *TAXES60*. Ratio of the total dollar property taxes paid by central city residents in 1960 to the total 1960 central city population (U.S. Bureau of the Census, 1962, Table 6).
14. *CRIME60*. The estimated number of 1960 murders, non-negligent manslaughter, forcible rapes, aggravated assaults, and burglaries, divided by the total central city population in 1960, multiplied by 100,000. The estimate was obtained by averaging the numbers of each type of crime for 1959, 1960, and 1961 (U.S. Federal Bureau of Investigation, 1960, 1961 and 1962).
15. *RIOTS*. Index of riot frequency. Operational definition and sources of data described in text.
16. *ED60*. Per capita expenditures on public school children in the central city in 1950 (U.S. Bureau of the Census, 1962, Table 6; U.S. Bureau of the Census, 1963, Table 73).
17. *CCTOSUB*. Estimated proportion of central city residents in 1967 who moved to the suburbs of that city (U.S. Bureau of the Census, 1973a).
18. *INTOSUB*. Proportion of in-migrants to the SMSA between 1965 and 1970 who moved to the suburbs (U.S. Bureau of the Census, 1973a).

defined as the proportion of all of the metropolitan area's dwelling units contained in the central city in 1960. (This definition is used in preference to the more customary proportion of the total metropolitan population within the central city [e.g., Schnore, 1965:210] because it more directly indicates the ability of the city to contain the built-up area.) The second variable (ΔANNEX) is percent increase or decrease between 1960 and 1970 in the central city population due to annexation. (This index of change is used instead of changes in the number of dwelling units in annexed territory because the necessary data are not readily available.)

Job suburbanization (JOBSUB60 and NEWDUSUB): The third structural variable is the distribution of manufacturing, retail, and wholesale jobs between central cities and suburbs in 1960. This distribution has been shown in other contexts to be an important location constraint on households, largely because households generally attempt to minimize the length of the journey to work, *ceteris paribus* (Carroll, 1949; 1952; Hoover and Vernon, 1962; Kain and Nidercorn, 1975; McAllister et al., 1971; Schnore, 1954). Service and retail activities are also likely to attract population since they represent important amenities, and these are combined with manufacturing and retail jobs to simplify the analysis. The hypothesis is that whites were attracted to the suburbs of metropolitan areas where jobs and services were decentralized in 1960.

A closely related variable is the distribution of jobs added to the metropolitan area between 1960 and 1967 (NEWJOB-SUB). The distribution of new jobs is distinguished from that of jobs in 1960 because both are expected to have independent effects on the distribution of new dwelling units and white suburbanization.

Suburbanization of new dwelling units (NEWDUSUB): A powerful determinant of the location of households is likely to be the location of new housing. This is probably for in-migrants to metropolitan areas as well as for central city residents. While many of the former will be attracted to older housing, it is anticipated that most will flow into newer units, whether located in the central city or its suburbs. At

the same time, newly formed households in central cities, or families which enter the child-bearing stage of the family cycle, are likely to prefer new housing because it tends to be more spacious than older units (McAllister et al., 1971; Rossi, 1955), regardless of its location.

Regional location and size (REGION AND SIZE60): Finally, the possible effects of regional location of the SMSA and the 1960 size (SIZE60) of the central city are considered. Both, especially region, reflect a complex of factors, including historical differences among metropolitan areas in the numbers of blacks, the distribution of blacks and high-status persons between central cities and rings, the period in which they experienced their initial suburban expansion, and their age. For these reasons, although there is little substantive interest in these variables per se, it is necessary to control them to avoid misspecifying the structural equation model developed here.

Push Variables

Civil disorder. Turning now to push variables (negative characteristics of central cities which lead whites to leave and/or to avoid them in the first place), a frequently mentioned variable is civil disorder. While many studies have addressed the causes of civil disorder, especially riots (e.g., Jiobu, 1971; 1974; McElroy and Singell, 1973; Spilerman, 1970; 1971) and their severity (Wanderer, 1969; Spilerman, 1976), none has examined their consequences. However, this is frequently cited as an important component in the explanation of white suburbanization. Civil disorder has a number of dimensions: strikes by municipal employees such as teachers and policemen, civil rights protests, and race riots. Furthermore, each of these has subdimensions, such as duration in days, numbers of persons involved, and, in many, numbers of persons injured and/or killed, dollar loss, and numbers of persons arrested.

Measures of each dimension of civil disorder were obtained for each central city, and a series of factor analyses performed to create indices of the various dimensions. The general hypothesis is that

each is positively related to white suburbanization. However, interesting empirical questions are: which dimension has the strongest relation and what is the degree to which any correlation reflects a causal impact?

Crime rate (CRIME60). Another frequently listed negative feature of central city life which presumably affects suburbanization is a high crime rate (e.g., Gold, 1970; Wilson, 1970). Berry (1975:178) neatly summed up this view with his remark that "violence . . . is a pervasive underpinning of central city life." President Johnson's Task Force on Individual Acts of Violence (1970) suggested that crime is contributing to the emergence of the "defensive city," where suburbs, physically distant from the central city, will be "safe areas." However, almost no attempt has been made to actually evaluate the impact of this variable on white suburbanization. The measure of CRIME60 is the rate per 100,000 persons of the number of reported murders, non-negligent manslaughters, forcible rapes, aggravated assaults, and burglaries (breaking and entering). These crimes were chosen because they most directly represent threats to personal safety.

Taxes (TAXES60). The very high property taxes which central city residents pay are often cited as an important reason for the loss of jobs and white population. This variable is defined as the ratio of the total property taxes paid by the residents of the city in 1960 to the total population in that year. It is expected that TAXES60 has positive effects on both measures of white suburbanization.

Percent black 1960 (PCTBLACK60). One of the most emotionally charged issues of the seventies is the role of black population size in white suburbanization. In usual versions of explanations, considerable emphasis is given to white racism—the feeling that whites simply will not live in cities where the black population is large. Whites presumably desire to minimize contact with them—contact which is necessarily high under such circumstances, especially in public places (cf. Berry, 1973:53; Rose, 1976:7). Therefore, a positive relation is antici-

pated between PCTBLACK60 and the two measures of white suburbanization.

School quality (ED60). The quality of local schools is often assumed to be an important consideration by whites in the calculus about where they will live. In particular, the higher quality of suburban compared with central city schools has been emphasized as a major factor contributing to the "flight" of whites to the suburbs during the sixties. While this consideration is especially salient for families with children, many presently childless couples may anticipate having children at some future time and therefore base their location decisions in part on school quality.

This variable is not easily quantified, particularly for units as large as cities where there is considerable intradistrict variation in the quality of schools. The operational definition used here is per capita expenditures on public school children. The amount of money spent per child affects the salaries of teachers and the extensiveness of facilities, such as laboratories and libraries, as well as special services. The specific hypothesis is that per capita expenditures in central cities is inversely related to the two measures of white movement to the suburbs.

Another component of school quality is the frequency with which the system was disrupted by strikes and racial disorders, as well as their severity. The sixties was a period in which teacher unions became increasingly militant, especially during the later years when the whites studied here were making their decisions. There were also numerous school closings because of racial confrontations. As described in the methods section, a number of dimensions of school disorder were operationally defined and emerged as distinct factors in the factor analysis. It is anticipated that the index created from this factor is positively related to white suburbanization.

METHODS

Units of Analysis and Operational Definitions

*The units of analysis are metropolitan areas which had a central city of 100,000

or more in 1960, where the central city and the SMSA in 1970 were not coterminous. This subset was selected from all SMSAs because there are major structural differences between large and small metropolitan areas especially in the tendency for high status persons to be relatively concentrated in the central cities of the latter (e.g., Schnore, 1965). The two SMSAs from which counties were deleted to form new SMSAs (San Francisco-Oakland and Los Angeles-Long Beach), as well as the three SMSAs where the number of central cities in 1970 differed from 1960 (Winston-Salem, Seattle-Everett, Beaumont-Port Arthur-Orange) were also deleted. The final N is 112.

There are two dependent variables, both of which are taken from the Fourth Count Summary Tapes of the 1970 Census of Population and Housing (U. S. Bureau of the Census, 1973a). The first dependent variable is an approximation of the probability that central city residents in 1965 moved to the suburbs of that central city between 1965 and 1970. This variable is defined as:¹

$$\frac{\text{Probability of white central city residents moving to suburbs (CCTOSUB)}}{\text{White residents five years of age or older of the central city in 1965 who resided in the suburbs in 1970}} = \text{mid-1967 central city white population}$$

No distinction is made in this analysis between the two stages of mobility from central cities to suburbs—the factors affecting the decision to move compared with those affecting the choice of a specific location (city versus suburb, in this case). This is not done because primary interest is in direct comparison of the pattern of causes for the two measures of population suburbanization. (For an excellent discussion of this distinction see Frey 1978.)

The second dependent variable is an approximation of the probability that in-migrants to the metropolitan area between 1965 and 1970 settled in the suburbs. This variable is defined as:²

$$\frac{\text{Probability of a white in-migrant to the SMSA settling in the suburbs (INTOSUB)}}{\text{White suburban residents five years of age or older in 1970 who lived outside of the SMSA in 1965}} = \text{White SMSA urban residents in 1970 who lived outside of the SMSA in 1965}$$

¹ This is only an approximation of the "true" probability for three reasons: (1) it underestimates the true probability because it does not include persons who moved to the suburbs between 1965 and 1970 and then either moved back to the central city or outside of the metropolitan area; (2) the mid-1967 white population of the central city is an estimate obtained on the assumption that it grew (or declined) at a constant rate each year between 1960 and 1970; (3) it does not take into account mortality among those who moved to the suburbs and then did not survive until 1970.

Note that the denominator refers to the mid-1967 estimate of the central city population because persons reported as living in the suburbs in 1970 and the central city in 1965 moved in 1965, 1966, 1967, 1968 or 1969. Assuming that movement was evenly distributed over each of these years, then the appropriate base population is the midpoint of the interval—mid-1967, the year in which the average migrant to the suburbs moved there. While some ambiguity remains by use of the mid-1967 base since it includes persons born between 1965 and that point, it has a clearer theoretical meaning. Moreover, since the numbers of persons involved are quite small in comparison with the remaining population, the resulting zero-order and partial correlation coefficients are virtually identical to those obtained when the 1965 base is used.

² As with CCTOSUB, this understates the true probability since it does not include persons who first moved to the suburbs and then to the central city, or those who moved in and then out of the SMSA between 1965 and 1970. It also does not include persons who moved to the suburbs and did not survive until 1970. Unlike the denominator for CCTOSUB, the denominator for INTOSUB refers to in-migrants only. While it is true that these persons could have moved into the SMSA at any time between 1965 and 1970, concern is with how the entire group of in-migrants was distributed, and the idea of a mid-year is not relevant.

The "suburban" population is defined as the urban white population outside of the central city but within the boundaries of the SMSA. That is, a "suburbanite" is a person who lives in a place of 2,500 or more, or in a densely settled area coterminous with a city of 50,000 or greater, but not in the central city. The urban population in the ring is used in preference to the entire ring population because in many metropolitan areas this latter group contains a substantial rural component. In fact, in 1970 more than 25% of the total population within SMSAs but outside of their central cities was rural (Farley, 1976:5). However one defines "suburban," such persons are not likely to be included. In metropolitan areas with more than one central city, these were combined.

The indices of civil disorder were developed from several sources. As part of a broader study of civil disorder and violence in United States cities during the sixties, data on several general categories of this concept were obtained for each central city and each year from 1965 through 1969. These categories, and their operational definitions, were:

(a) *Civil rights protests*. Organized protests by blacks, involving at least 30 persons.

(b) *Violent incidents*. Unorganized spontaneous outbursts of black violence involving small numbers (30-100) of blacks and of relatively short duration (usually three days or less) and with relatively small amounts of property damage (less than \$100,000).

(c) *Riots*. Unorganized, violent outbursts of blacks involving large numbers (100 or more) of blacks, of relatively long duration (more than three days), with relatively substantial property damage (\$100,000 or more), and loss of life or significant numbers of personal injuries.

(d) *Municipal services*. Strikes by personnel providing important city services, such as mass transit operators, garbage collectors, and hospital, police, and fire personnel.

(e) *School closings because of interracial fights between students*. At least one day's duration.

(f) *Teacher strikes*. An organized group

of teachers (e.g., union) not teaching for at least one day.

For each of these general categories several specific items were obtained. In the case of riots, the following information was coded for each: duration in days; number of persons killed; number of persons injured; estimated property damage in thousands of dollars; number of persons involved; and number of persons arrested. For all other categories appropriate data on the intensity and extensiveness of each was coded.

The principal source of data was the *New York Times Index*. For each year the various relevant headings were searched, and if an incident from one of the above categories occurred in a central city of an SMSA, the data was coded.³ The data for riots and racial incidents was supplemented by the reports of the Lemberg Center for the Study of Violence (1968a, b) and the Report of the National Advisory Commission on Civil Disorders

³ Since virtually all of the data on the various types of civil disorder came directly or indirectly from the *New York Times Index*, there is some question about the completeness of its reporting. Even the riot data, which was supplemented by the additional sources cited above, are based primarily on newspaper reports, especially the *New York Times*, the *Washington Post*, and the *Washington Star* (Danzger, 1975). The potential problem, of course, is that many incidents will not find their way into these publications, either because they are never reported to them or because they are not considered important enough to interest New York or Washington readers.

The only systematic analysis of this question is Danzger's (1975) study of the validity of his own data on black-white conflicts in cities. He found that the presence of an AP/UPI office was strongly related to whether a conflict event was reported in the *New York Times*. Since the units used in the present study are very large metropolitan areas, most have an AP or UPI office in at least one city in the SMSA. Consequently, this source of contamination is largely controlled. Furthermore, Danzger (1975) argues that reports of the details of a conflict event, such as numbers of participants, are valid because of the self-correcting nature of news reporting. While the riot data are consequently assumed to be valid, this may not be the case with the other disorder data. A teacher or hospital strike in Dallas, for example, may be less likely to be reported in the *New York Times* than a riot in that city because it is less likely to be defined as "important" for New York readers. Because of this, the validity of the indices of these other variables is less clear than in the case of riots and riot characteristics, and this should be considered in interpreting the findings.

(1968). Each incident was cross-checked to broaden the information contained in the *New York Times Index*. Finally, the data for each variable (duration in days, estimated property damage, etc.) were aggregated for the 1965–1969 period. For each central city, this aggregation produced separate variables referring to the total number of days in which rioting occurred between 1965 and 1970 and total estimated property damage during that period.⁴

Measurement Issues

Finally, two methodological issues, with theoretical implications, are considered. The first is whether the independent variables should refer to the position of the central city relative to its suburbs, or to the central city only. It is clear that an individual's decision about where he or she will live is based upon comparison of the net advantages of one site compared with another. For example, if crime and/or the presence of blacks are salient considerations in this calculus, it is evident that there will be net flow away from sites where crime rates and the number of blacks are high toward those where both are low. This suggests that the appropriate type of variable is the relative position of suburbs and cities—for example, the ratio of the percent of blacks in the suburban population to the comparable percent in the central city, or the ratio of the suburban to the central city crime rates.

However, this reasoning is based on the assumption that the "suburbs" comprise a single community. More precisely, it assumes that crime rates and the relative size of black populations are the same in each suburb. In fact, this is not the case. As Hermalin and Farley (1973) showed for blacks, and Stahura et al. (1980) for crime rates, there is tremendous variation across suburbs on both. It is likely that this is

also true for many of the other variables used in this study, and consequently inferences based on the correlations of relative position variables involve a kind of ecological fallacy. Consequently, the most valid type of independent variable refers to characteristics of the central cities only. The exceptions, for reasons developed here, are the distribution of jobs and dwelling units.

In other words, it is assumed that if crime is an important consideration for whites about where they will live, and if the crime rate is high in the central city, then they will be able to find a suburb where the crime rate is low. To the extent that suburbs of particular metropolitan areas are *not* heterogeneous with respect to one another and to their central city, then the observed correlations between white movement to the suburbs and such variables as crime and tax rates, for example, are biased. However, since the analysis is restricted to large metropolitan areas, the assumption of heterogeneity seems warranted. (For further discussion of this question see Bradford and Kelejian, 1973.) This reasoning is applied to all of the push variables previously described.

This reasoning does not apply to the distribution of jobs and dwelling units—in the case of jobs, because of the considerable variation in the degree to which suburbs are net importers or exporters of labor (Schnore, 1965:175–7). The result is considerable intrasuburban movement of workers—the fastest growing commute in metropolitan areas (Meyer, 1970). In other words, to the extent that jobs are relatively concentrated in the suburban ring, compared with the central city, workers are expected to move to the former, even though they may not settle in the same suburb where they work. This differs from the rationale for a variable such as crime, where the individual is comparing the levels in the central city with those in a particular suburb, and consequently where the aggregate crime level in all suburbs is not relevant.

In the case of the location of new dwelling units, it is expected that population flows into new housing wherever it is located. If the bulk of these units is placed in the suburbs, then the bulk of

⁴ The headings most commonly used were: Education, U.S., Racial Integration, Negroes, Housing Discrimination, Riots, Teachers, Government Employees, etc. The headings changed somewhat from year to year. When the summary in the index was incomplete, the newspaper article on which it was based was examined, using microfilmed copies of the *New York Times*.

in-migrants or central city families who require it will relocate there. The issue of suburban heterogeneity is not relevant. If, for example, a substantial quantity of new housing is placed in an older suburb, families which can afford it will move there.

The second issue is the point in time to which the variables refer. Of course, this is not problematic for region, size, JOB-SUB60, ANNEX60, DENSITY60, the indices of new jobs and housing, or either measure of suburbanization. The time to which taxes, percent black, and crime should refer is more problematic. From one point of view, each should refer either to 1965 or the midpoint of the 1965-1970 interval. However, correlations of variables measured at this point in time with the suburbanization measures will be upwardly biased (Greenwood, 1975).⁵

There are also theoretical reasons to prefer 1960 levels of variables. It seems likely that these have a lagged effect on white suburbanization. Perceptions about the size of a city's black population or its tax levels, for example, are probably diffused slowly and there is likely to be a gap between dissemination of such information and present levels. Whether the lag chosen here is the appropriate one is an empirical question which cannot be directly answered with the available data. These issues do not arise for riots and the measures of the distribution of new jobs and dwelling units since they are not estimates, nor is the question of a lag relevant.

⁵ Data are not available for years between the decennial censuses of population, with the exception of crime data. Consequently, estimates must be obtained using some kind of interpolation, usually linear, between 1960 and 1970. The source of the bias is most evident for percent black if estimated using this technique. If large numbers of white in-migrants to the Chicago SMSA, for example, chose the suburbs, then the percent of the Chicago central city which was black will be higher than if small numbers made this choice. If a linear interpolation of the 1960 and 1970 numbers of central whites and blacks is then used as part of the denominator, this estimate will be influenced by the relative size of the suburban stream going to the suburbs. Consequently, a correlation will be "built in" between white suburbanization and the estimate of percent black in 1967, resulting in an upward bias. A similar argument is made for taxes and LT50.

FINDINGS

Factor Analyses

The first concern is construction of indices of civil disorder and their relation to white suburbanization. The specific version of factor analysis used was the principal components technique. Several factor analyses were performed, using somewhat different subsets of measures from each of the classes of variables described above. It was necessary to limit the number of variables in each analysis since the number of cities was only 112.

Several factors emerged that tended to be fairly stable for each analysis: teacher strikes, public employee strikes (other than teachers), riot severity, riot frequency, and civil rights protests. On the basis of the factor coefficients, indices of each factor were constructed and correlated with the two measures of white suburbanization. However, only the two riot factors were even moderately correlated with these dependent variables. Indeed, individual measures used to construct the indices sometimes had higher correlations than the indices themselves. Of course, it does not follow that these are unimportant dimensions of civil disorder, nor that they are unrelated to any aspect of white suburbanization. (This question is pursued in a separate study.)

In the context of the present study, the findings that most aspects of civil disorder are unrelated to white suburbanization are important negative results. It appears that, contrary to popular notions about the etiology of the suburban trend, civil unrest in large cities during the sixties was largely unrelated to the decisions of white central city residents to move to the suburbs or of in-migrants to locate there. In particular, municipal employee strikes (other than teachers), teacher strikes and school closings due to interracial violence, and civil rights protests apparently played little or no role in these decisions.

However, such may not be the case with race riots, and this variable was further analyzed. To obtain more stable indices the full range of specific characteristics of riots were separately factor analyzed, again using the principal components technique. Two clear factors

emerged from the analysis. The first suggests a "seriousness" dimension, and the second a "frequency" dimension. When indices were constructed representing each of these dimensions, using the factor coefficients, the frequency factor was much more strongly correlated with both measures of white suburbanization than the seriousness factor. Whites are apparently much less concerned with the amount of damage caused by riots than they are with their frequency and duration—a substantively interesting finding.

Correlation Analyses

Next, the zero-order relations between the independent variables explicated here, including riot frequency (RIOTS) and the two measures of white suburbanization, are examined and presented in Table 2 along with the means and standard deviations. The indices of riot seriousness as well as the other indices which emerged from the first factor analysis are not examined further because of their small correlations with the two measures of suburbanization.

Before examining these relations in detail, it was necessary to test the hypothesis that they are linear. This was done by determining whether an equation containing a curvilinear term significantly incremented the variance explained by a linear equation (Namboodiri, et al.,

1975:153). Statistically significant departures were observed for a number of relations. However, statistical significance does not necessarily mean that there is a substantively important nonlinear trend. The latter can be inferred from a graph in which coefficients from the significant curvilinear equations are used to plot the actual curves. This operation indicated that all of the statistically significant curvilinear trends are, for all practical purposes, linear. Consequently, the assumption that the relations between the independent variables is linear does not seriously distort the data, and subsequent discussion and analysis is based on it.

The correlations in Table 2 provide an indication of the strength of the various associations, if not their causal impact. Many are substantial and most are consistent with the hypotheses outlined above. However, there are some surprising exceptions, particularly in the case of PCTBLACK60 and ED60. PCTBLACK60, although in the predicted direction, is small compared with many of the other variables. In the case of ED60, the correlation with CCTOSUB is virtually zero, and the correlation with INTOSUB is small. The strongest relations with white suburbanization are with ANNEX60 and NEWDUSUB, although DENSITY60, JOBSUB60, PCTSINGLE60, LT50 and RIOTS also have moderate to strong relations with it.

The only clear pattern in Table 2 is the

Table 2. Correlations Between Independent Variables and Population Suburbanization

	CCTOSUB	INTOSUB	\bar{X}	S
DENSITY60	.31	.40	5,982	4,133
JOBSUB60	.29	.33	.30	.29
NEWJOBSUB	.07	.18	.56	.65
ANNEX60	-.56	-.70	.41	.16
ΔANNEX	-.07	-.13	7.1	11.5
NEWDUSUB	.60	.75	.58	.21
RIOTS	.37	.40	-.01	.98
CRIME60	.40	.20	820	380
TAXES60	.15	.30	50.5	38.4
PCTBLACK60	.18	.20	.15	.12
LT50	.25	.48	.60	.18
PCTSINGLE60	-.22	-.42	.64	.20
OWNER60	-.11	-.22	.54	.16
ED60	.02	.18	121.0	188.8
SIZE60	.06	.09	413,372	818,412
REGION	-.18	-.28	.35	.48
CCTOSUB	...	.72	.08	.06
INTOSUB	.72	...	.48	.22

general tendency for the correlations between the independent variables to be larger with INTOSUB than with CCTOSUB, and many of the differences are substantial. One possible interpretation of the pattern is inertia. By definition, in-migrants to metropolitan areas are in the process of changing residences, and they may be much more affected by negative features of the central city and/or its position relative to the suburbs. Central city residents, on the other hand, must be induced to move, and it may take a much greater degree of "push" and/or "pull" to set them into motion.

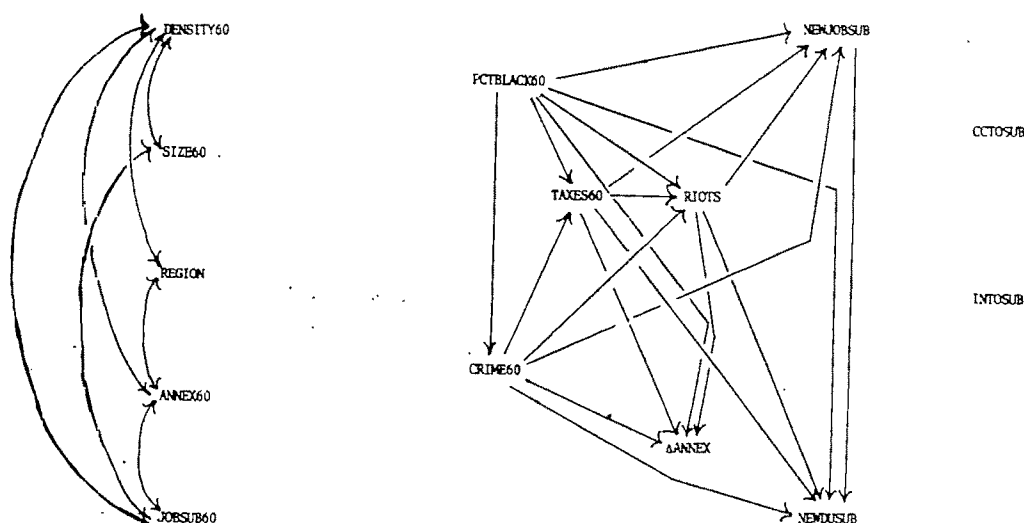
Multivariate analysis

Finally, path analysis is used to explore the question of the degree to which the correlations reported in Table 2 represent causal impact. Concern is with that part of the total association between the independent variables and suburbanization which is spurious, as well as the process through which the former affect suburbanization. Path analysis requires specification of the causal order among the variables, as well as the assumption that variables not included in the model which affect particu-

lar endogenous variables do not affect others (e.g., Duncan, 1975).

Several alternate specifications are possible, given the large number of variables involved in the study, many of which tap alternate dimensions of the same underlying concept, and the mix of cross-sectional and dynamic variables. The particular specification evaluated here is summarized in Figure 1. Following the usual convention, each hypothesis is represented by an arrow linking two variables. However, arrows linking the exogenous with the endogenous variables are not shown, nor are those linking the independent variables with the two measures of population suburbanization. The large number of additional arrows would make the diagram needlessly complex and consequently difficult to follow.

It should be understood that, unless otherwise specified, the hypothesis that each exogenous variable affects all endogenous variables is implied and analyzed, and that all independent variables are hypothesized to affect both measures of suburbanization. In cases where no causal link is assumed, the implied hypothesis is that the partial correlation between these variables, with other



^a Arrows linking the exogenous variables with the endogenous variables are not shown, nor are the arrows linking the independent variables with the two aspects of white suburbanization. The arrows are omitted because their inclusion would enormously complicate the diagram, and the implied causal order is clear.

Figure 1. Path Diagram ^a

exogenous variables controlled, is zero. The entire model is thus overidentified and recursive.

The principal criterion for inclusion of variables in the model is their theoretical importance, although the size of the zero-order correlations with the two measures of suburbanization was also considered. The latter criterion led to the exclusion of the various measures of civil disorder, except riot frequency and duration (RIOTS) and educational quality (ED60). In fact, when these variables were included in a model which also contained the variables displayed in Figure 1, none had significant direct or indirect effects on suburbanization.

The rationale for the general distinction between exogenous and endogenous variables largely follows from the earlier distinction between structural and push variables. Most of the former are assumed to be exogenous, not causally dependent on one another, although they are expected to be correlated. (These hypotheses are reflected by the curved arrows linking those variables in Figure 1.) They are not ordered with respect to one another because, as indicated in the theory section, they are relatively enduring structural characteristics of metropolitan areas which evolved over many decades, and it is not likely that they influence one another over short periods of time.

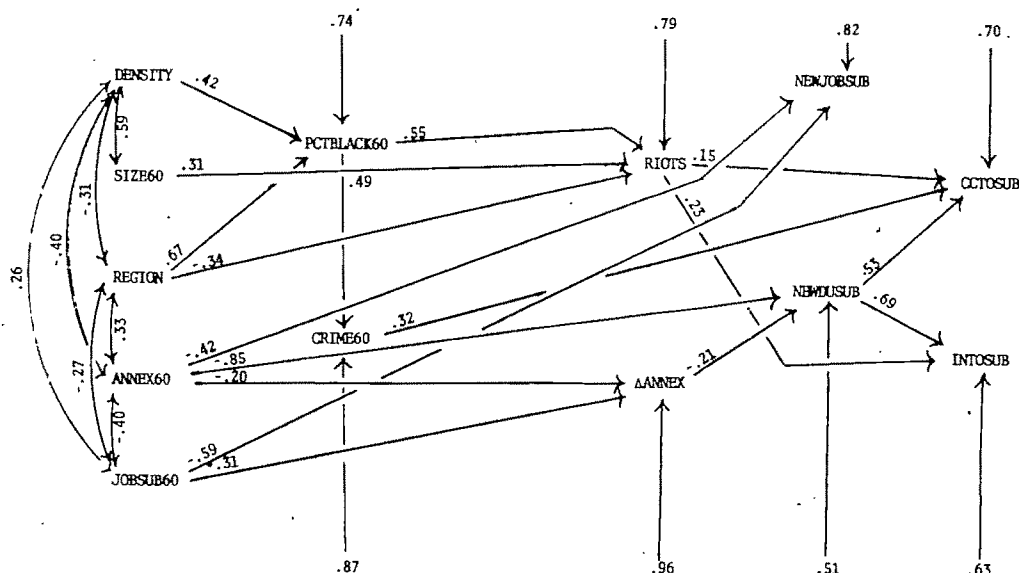
The endogenous variables, on the other hand, are regarded as more subject to short-term change and are considered causally dependent on the exogenous variables, with exception of JOBSUB60 and ANNEX60, for reasons given here. The general argument is either that the levels of endogenous variables are almost simultaneously determined by the level of other endogenous or exogenous variables, or that the exogenous variables, because of their greater stability, clearly emerged before the endogenous variables. For example, the crime rate in 1960 is assumed to more-or-less immediately affect the tax rate, as is the size of the black population, largely because the latter variable is a proxy for low-income persons. Regarding the relation between the endogenous and exogenous variables, the only ambiguous relation is with percent black.

It is assumed here that the relative levels of the exogenous variables were largely established prior to black population growth.

Considering specific relations, RIOTS are assumed in this specification to be a function of all prior variables except JOBSUB60 and ANNEX60. Because of the points in time at which RIOTS and the variables assumed to precede it are measured, it is obvious that the latter set cannot be affected by RIOTS, and the direction is clear. What is less clear are the possible effects of variables other than PCTBLACK60 and region. DENSITY60 and size may reflect the overall degree of social control or stability, while high taxes may produce resentment on the part of blacks. High crime rates may also reflect an underlying instability which makes riots more likely. In the case of PCTBLACK60 and region there is clear evidence that the size of the black population and southern location affected the frequency of riots during the sixties (e.g., Spilerman, 1971).

RIOTS may also have some inhibiting effect on the ability of the central city to attract new jobs and housing as well as to annex surrounding territory. Business and housing contractors may tend to avoid central cities where there were frequent riots, and these cities may also have some difficulty annexing surrounding territory. Similar arguments are made for PCTBLACK60 and CRIME60. Finally, PCTBLACK60 is hypothesized to affect CRIME60 indicated above.

Turning to the remaining relations between the exogenous and endogenous variables, note that none of the direct measures of central city housing quality are included in the model. Instead, because of its more clear-cut theoretical meaning, only DENSITY60 is represented. As suggested earlier, central city density is closely associated with the transportation era within which it emerged, and, consequently, with its age and the amount of older, multifamily housing. The latter is expected to affect crime and tax rates through its impact on the size of the poverty population. It is also expected to affect the size of the black population, since blacks have historically been at-



* Path coefficients not significant at the .05 level have been deleted and the model refitted. TAXES60 is also omitted because it had nonsignificant effects on CRIME60, JOBSUB60, RIOTS, NEWJOBSUB, or NEWDUSUB, or on either measure of white population suburbanization. While NEWJOBSUB had no significant effects on NEWDUSUB or on either measure of white population suburbanization, it is retained in the figure for reasons given in the text.

Figure 2. Path Diagram with Path Coefficients*

tracted to such housing, as well as the ability of the city to annex surrounding territory. Finally, density may affect taxes, largely through its effect on the crime rate and black population size. In short, DENSITY60 is the best single summary index of a number of closely related characteristics. However, alternate specifications using LT50 or PCT SINGLE lead to essentially the same conclusions.

The likely effects of ANNEX60 are clear.⁶ Central cities which contained a large proportion of the SMSAs 1960 housing are expected to attract relatively more jobs and new dwelling units, and also to

annex population between 1960 and 1970. However, there is no reason to anticipate any effect of this variable on RIOTS, TAXES60, CRIME60, or PCTBLACK60, as indicated before. JOBSUB60 is expected to affect the volume of suburban housing construction, on the assumption that new housing is located proximate to jobs. There may also be an effect on the location of new jobs, as well as on the ability of the city to annex surrounding population. There are no reasons to expect JOBSUB60 to affect any of the other endogenous variables.

The relations between size and region and the endogenous variables are not specified in detail. Both are proxies for a number of unmeasured variables, and it is pointless to specify hypotheses linking each to the host of variables which follow them. They are included primarily as controls, and there is little theoretical interest in their effects per se.

The specification, summarized in Figure 1, permits examination of the key questions to which the research is addressed, and the results of the path analysis are presented in Figure 2 and Table 3. The

⁶ Many of the SMSAs added counties during the sixties, and two lost a county. The former were deleted from the study. However, it is possible that the addition of counties affected the two suburbanization measures as well as the distribution of new jobs and dwelling units. To examine this possibility the ratio of the 1970 to 1960 SMSA land areas was correlated with these variables, and all were very small and not statistically significant at the .1 level. Moreover, when this boundary change index was included as a regressor in the equations for NEWJOBSUBS, NEWDUSUB, CCTOSUB, and INTOSUB, it remained small and nonsignificant.

Table 3. Components of Correlations Between Independent Variables and White Suburbanization¹

	Total Association ²		Total Causal ³		Direct Effect ⁴		Indirect Effect ⁵		Joint Effect ⁶		Spurious ⁷	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
NEWDUSUB	.60	.75	.53	.69	.53	.69	NA	NA	NA	NA	.07	.06
NEWJOBSUB	.07	.18	...	...	...	...	...	...	NA	NA	.07	.18
ΔANNEX	-.07	-.13	-.11	-.14	...	...	-.11	-.14	NA	NA	.04	.01
RIOTS	.37	.40	.15	.23	.15	.23	...	...	NA	NA	.22	.17
CRIME60	.40	.20	.32	...	.32	...	...	...	NA	NA	.08	.20
TAXES60	.15	.30	...	...	...	...	...	...	NA	NA	.15	.30
PCTBLACK60	.18	.20	.24	.13	...	...	.24	.13	NA	NA	-.06	.07
DENSITY	.31	.40	.28	.32	...	...	.10	.05	.18	.27	NA	NA
SIZE60	.06	.09	.11	.10	...	...	.05	.07	.06	.03	NA	NA
REGION	-.18	-.28	-.07	-.20	...	...	.11	.01	-.18	-.21	NA	NA
ANNEX60	-.56	-.70	-.45	-.59	...	...	-.43	-.56	-.02	-.03	NA	NA
JOBSUB60	.29	.33	.20	.28	...	...	.03	.04	.17	.24	NA	NA

¹ Columns 1, 3, 5, 7, 9, and 11 refer to CCTOSUB, while columns 2, 4, 6, 8, 10, and 12 refer to INTOSUB.

² The total association is the zero-order correlation between an independent and a dependent variable. In path analysis this association is decomposed into component parts: direct effects; indirect effects; a spurious component in the case of endogenous variables, a joint component in the case of exogenous variables.

³ The total causal (effect) is the sum of the direct and indirect effects in the case of endogenous variables. In the case of the exogenous variables the joint effects are included in the total. Although this is not customary, it is consistent with the text discussion of the effects. The sum of the joint and indirect components does not correspond to the zero-order correlation coefficient because statistically nonsignificant paths were deleted and consequently the correlation coefficient is not the sum of the joint, direct, and indirect effects. However, the observed correlations tend to be quite similar to the reproduced correlations. Furthermore, in the case of the endogenous variables, since the spurious component was obtained by subtracting the direct and indirect effects from the correlation coefficient, there is some ambiguity in its interpretation.

⁴ The direct effect is the path coefficient, the proportion of the standard deviation of each measure of suburbanization accounted for by the independent variable after the effects of all other variables in the equation have been controlled.

⁵ The indirect effect of a variable is its effect on the dependent variable through its effects on other variables in the model which in turn affect the dependent variable.

⁶ The joint component is that portion of the zero-order correlation between an exogenous variable and the two measures of white suburbanization due to its correlation with other exogenous variables which in turn cause variation in the dependent variable.

⁷ The spurious component is that portion of the zero-order correlation between an exogenous variable and the two measures of white suburbanization due to its correlation with other exogenous variables which in turn cause variation in the dependent variable.

model was fitted twice. The second, schematically represented in Figure 2, resulted from deleting from the first model paths which were not significant at the .05 level. While somewhat arbitrary in view of the fact that almost all of the variables are based on population data, the population suburbanization indices are based on a 15% sample, and a significance test is consequently required. Moreover, the magnitudes of almost all of the paths deleted using this significance level were between .00 and .10, and their elimination greatly simplifies the model's interpretation. Retention of such small paths would have greatly increased the model's apparent complexity without affecting the substantive interpretations.

The data in Figure 2 and Table 3 have

clear implications for the popular interpretation of white movement to the suburbs as "flight." Central city tax rates had no causal impact, direct or indirect, on either measure of white suburbanization and it is consequently not represented in Figure 2; its moderate zero-order correlation with white suburbanization is apparently entirely spurious (Table 3). While riots had some direct effect on both measures of white suburbanization, it is quite small compared with the distribution of new housing, suggesting that riot frequency played a very minor role.

The strongest direct support for the "flight" hypothesis is the moderate impact of CRIME60 on the probability that a central city white moved to the suburbs. However, this variable had no effect on

the probability that a white in-migrant settled in the suburbs, and this is the principal difference between the causal structures for INTOSUB and CCTOSUB.

The process through which the relative size of the black population affects white decisions to move to the suburbs is also inconsistent with the popular view that whites are fleeing blacks. Not only is its causal impact small compared with other variables in the model (Table 3, cols. 3 and 4), its impact is entirely indirect. Central city whites are apparently not concerned about the relative size of the black population *per se*; or, if they are, this concern is not reflected in decisions to move to the suburbs. Instead, it is only because large black populations are associated with high crime rates and frequent riots that whites leave central cities, and even this indirect effect is not large. In the case of white in-migrants, the indirect effect is much smaller.

The similarities between the two causal structures are more pronounced than their differences. The primary constraint on decisions by white in-migrants to metropolitan areas and central city residents about whether they will live in the suburbs is the location of new housing. This does not mean that they are not concerned with crime, at least in the case of central city residents, only that the concern is less important. All of the other independent variables operate entirely through CRIME60 and NEWDUSUB.

Indeed, looking at the entire model displayed in Figure 2 and Table 3, a rather clear and quite plausible picture of the process of white movement to the suburbs during the late sixties, or at least that portion represented by the two dependent variables analyzed here, emerges. A key factor was the extent to which the central city had historically been able to contain a substantial portion of the built-up area of the SMSA within its boundaries (ANNEX60). This was the dominant determinant of whether it was able to capture new housing development, which in turn was the major constraint on the movement of whites to the suburbs.

The lack of any direct effect of ANNEX60 on population suburbanization is somewhat surprising and suggests that

this variable primarily indexes the availability of space suitable for further residential development proximate to the city center. If such space was available, then new housing tended to flow into the central city; if it was not, then this housing was relatively concentrated in the suburbs. It does not appear that individuals and families were directly attracted to central cities in which the metropolitan area's housing stock was relatively concentrated.

The only other variable directly affecting NEWDUSUB was population annexation between 1960 and 1970—a relatively small effect. The absence of any effects of riot frequency and duration, crime, and percent black on NEWDUSUB is also interesting and strongly suggests that developers do not respond to these variables when deciding where to locate new housing.

However, it also appears that developers do not respond to the 1960 location of jobs and services, or the distribution of new jobs, when making location decisions. These patterns, coupled with the lack of any direct effects of the job distribution variables on either population or new dwelling unit suburbanization, are the major unanticipated findings of the study. The only impact of job distribution was JOBSUB60's very small and negative effect through Δ ANNEX. Most of the moderate relation between JOBSUB60 and population suburbanization reflects its correlation with ANNEX60. Metropolitan areas where the central city contained a large proportion of the jobs in 1960 also tended to contain a large proportion of the housing stock which largely accounts for the observed correlation. These data suggest that metropolitan areas are unified communities in which the labor force is sufficiently mobile to locate their residences without concern for their places of work.

NEWJOBSUB is included in Figure 2, even though it has no direct or indirect effect on population suburbanization. The pattern of coefficients suggests that racial considerations, along with central city crime and taxes, played no role in decisions about where to place new jobs. Instead, the most important consideration apparently was the extent to which jobs

were decentralized in 1960. The negative path coefficient implies that when jobs were highly decentralized in 1960 relatively few suitable sites were available for new jobs. The moderate effect of ANNEX60, on the other hand, probably reflects the availability of suitable sites near the city center and perhaps some attraction of jobs to population concentrations. (A small level of this variable reflects a high degree of dwelling unit suburbanization.)

In regard to the role of the other exogenous variables, we found that densely settled central cities failed to attract whites, or lost them to their suburbs, largely because they lacked the space to accommodate new housing, a conclusion implied by the large joint effect with ANNEX60 which accounted for 97% of the joint effect of DENSITY60 on CCTOSUB shown in Table 3, and 80% of the joint effect of DENSITY60 on INTOSUB. The strong correlation of JOBSUB60 with ANNEX60 also accounts for most of the "effect" of JOBSUB60 and region on the two measures of white suburbanization. Thus, the ability of a central city to annex surrounding territory over the decades before 1960 emerges as a key factor in its subsequent ability during the sixties to control suburbanization. The factor also accounts for much of the correlation of density, region, and job suburbanization with population suburbanization.

DISCUSSION

The results have a number of implications for public policy as well as ecological and popular explanations of white suburbanization. Considering the theoretical implications, the general conclusion is that the structural characteristics of metropolitan areas are the dominant constraints on white decisions to move to the suburbs. The role of "push" factors is less important even though they are a small part of the process linking structural variables to white suburbanization. The most general summary statement is that whites are drawn to the suburbs rather than pushed to them.

The strong effects of density are not for the reasons given in media interpretations;

whites apparently do not avoid densely settled central cities, or move from them, because of any desire for the "wide open spaces" of the suburbs, or to avoid any attendant "hustle and bustle." Such an inference would require an independent or direct effect, which is not observed. Instead white movement to the suburbs of dense cities simply reflects the lack of space for new housing. This strongly supports Schnore's (1965) assertion that whites began moving to the suburbs during the late forties because the space to accommodate the massive post-war demand for new single family dwelling units was generally not available in the central cities.

It is also consistent with the findings of Duncan et al. (1962) and Guest (1973) for census tracts that population redistribution is largely a function of the redistribution of dwelling units. This is, in retrospect, hardly surprising. In fact, it is surprising only in the context of the widespread emphasis given to the presumed roles of civil disorder, crime and racial consideration—factors which also have no apparent impact on the location of new housing.

Nonetheless, it is substantively interesting that despite the considerable variation in the degree of different kinds of civil disorder among central cities, including riot seriousness and riot frequency, only the latter appears to affect white suburbanization, and the effect is quite small. The rate of white suburbanization is essentially the same in metropolitan areas where the central cities experienced crippling strikes by municipal employees, large scale civil rights protests, lengthy school closings, and severe riots, as in those areas where the central cities were quiescent along all of these dimensions.

A partial explanation of the small impact of riots may be that, regardless of their severity, or even their frequency, the overwhelming majority of whites are not directly affected. The race riots of the sixties were confined almost entirely to black residential areas. Attacks on whites were focused on the policemen and firemen who attempted to control them, and the fires and looting rarely spread to white

neighborhoods. In the case of civil rights protests, while whites may or may not favor them, it appears that they did not sufficiently disrupt daily routines to lead whites to avoid or to leave central cities.

However, strikes by municipal employees, especially teachers and perhaps transit workers, clearly affect the life style of central city residents. The lack of correlation between strikes and white suburbanization may simply mean they were not sufficiently prolonged, or did not affect sufficiently large numbers of people, to have been a major consideration in residential decisions. It does not follow that there is no level of these variables that would affect white residential behavior, only that levels observed in the sixties did not have any visible impact.

The lack of any direct effect of the relative size of the black population also contradicts popular explanations. However, in retrospect, this may be easily explained. There is considerable evidence that the residential areas of blacks and whites were almost completely distinct; for all practical purposes whites were as segregated from blacks in 1970 as in 1960 and Sørensen approached the maximum possible (Sørensen et al., 1974). Moreover, percent black is positively related to degree of residential segregation: blacks in cities with relatively large black populations are more segregated residentially than are those in cities with small black populations (e.g., Jobu and Marshall, 1971). Thus, whites need not be concerned about the size of the black population.

Differences in the impact of crime rates on in-migrants compared with central city residents probably reflects the greater awareness of the latter. Unlike riots or even strikes and other manifestations of civil disorder, relatively little publicity is given to crimes in a given city by the media in other cities. Consequently, in-migrants to a metropolitan area are probably not aware of the degree of threat they may experience if they settle in the central city. This is manifestly not the case for current residents. Crimes are reported by local media and, if widespread, residents are likely to know, or know of, victims, as well as having been victimized themselves.

Finally, the analysis has numerous implications for urban policy-makers. It particularly suggests that attracting new housing to central cities can significantly affect current trends. Probably the most effective policy is government subsidy for acquisition of large parcels of land suitable for residential use—in short, a vigorous extension of current urban renewal projects.

Of course, such a strategy is politically feasible and morally defensible only if the groups, largely the poor and minorities, dependent upon housing destroyed by this process, can be relocated in the suburbs. This, in turn, points to the necessity for evolving strategies to overcome the effective resistance of suburbs to such relocation—resistance which has historically centered on zoning ordinances and refusal of realtors to show homes to otherwise qualified blacks in white areas (e.g., Downs, 1973).

REFERENCES

- Berry, Brian
1973 "Contemporary urbanization processes." Pp. 94-107 in *Geographical Perspectives on Urban Problems: A Symposium Organized by the Committee on Geography of the Division of Earth Sciences*, September, 1971. Washington, D.C.: National Academy of Sciences.
- 1975 "The decline of the aging metropolis: cultural bias and social process." Pp. 175-86 in George Sternlieb and James Hughes (eds.), *Post Industrial America: Metropolitan Decline and Interregional Job Shifts*. New Brunswick: Center for Urban Policy Research.
- Bogue, Donald and Dorothy Harris
1954 *Comparative Population and Urban Research via Multiple Regression and Covariance Analysis*. Oxford, Ohio: Scripps Foundation and the University of Chicago Population Research and Training Center.
- Bradford, David and H. Kelejian
1973 "An econometric model of the flight to the suburbs." *Journal of Political Economy* 81:566-89.
- Carroll, J.
1949 "Some aspects of home-work relations of industrial workers." *Land Economics* 25:414-22.
- 1952 "The relation of homes to work places and the spatial pattern of cities." *Social Forces* 30:271-82.
- Danzger, M. Herbert
1975 "Validating conflict data." *American Sociological Review* 40:570-84.

- Downs, Anthony
1973 *Opening up the Suburbs*. New Haven: Yale University Press.
- Duncan, Beverly, George Sabagh, and Maurice VanArsdol
1962 "Patterns of city growth." *American Journal of Sociology* 67:418-29.
- Duncan, O. D.
1975 *Introduction to Structural Equation Models*. New York: Academic Press.
- Farley, Reynolds
1976 "Components of suburban population growth." Pp. 3-38 in Barry Schwartz (ed.), *The Changing Face of the Suburbs*. Chicago: University of Chicago Press.
- Frey, William
1978 "Population movement and city-suburb redistribution: an analytic framework." *Demography* 15:571-88.
- Gold, Robert
1970 "Urban violence and contemporary defensive cities." *Journal of the American Institute of Planners* 36:146-59.
- Greenwood, Michael
1975 "Simultaneity bias in migration models: an empirical examination." *Demography* 12:519-36.
- Guest, Avery
1973 "Urban growth and population densities." *Demography* 10:53-70.
- Hermalin, Albert and Reynolds Farley
1973 "The potential for residential integration in cities and suburbs: implications for the busing controversy." *American Sociological Review* 38:595-610.
- Hoover, Edgar and Raymond Vernon
1962 *Anatomy of a Metropolis*. Garden City, N.Y.: Doubleday.
- Jiobu, Robert
1971 "City characteristics, differential stratification, and the occurrence of interracial violence." *Social Science Quarterly* 51:508-20.
1974 "City characteristics and racial violence." *Social Science Quarterly* 54:52-64.
- Jiobu, Robert and Harvey Marshall
1971 "Urban structure and the differentiation between blacks and whites." *American Sociological Review* 36:638-49.
- Kain, John and John Niedercorn
1975 "An econometric model of metropolitan development." Pp. 115-30 in John Kain (ed.), *Essays on Urban Structure*. Cambridge, Ma.: Ballinger.
- Lemberg Center for the Study of Violence
1968a *Compilation of the 1967 Disorders*. Unpublished. Waltham, Ma.: Brandeis University.
1968b *Riot Data Review Number 1-3*. Waltham, Ma.: Brandeis University. Mimeo.
- McAllister, Ronald, Edward Kaiser, and Edgar Butler
1971 "Residential mobility of blacks and whites: a national longitudinal survey." *American Journal of Sociology* 77:445-56.
- McElroy, Jerome and Larry Singell
1973 "Riot and non-riot cities: an examination of structural contours." *Urban Affairs Quarterly* 8:281-302.
- Meyer, John
1970 "Urban transportation." Pp. 44-75 in James Wilson (ed.), *The Metropolitan Enigma*. Garden City, N.Y.: Anchor Books.
- Namboodiri, N. Krishnan, Lewis Carter, and Hubert Blalock
1975 *Applied Multivariate Analysis and Experimental Designs*. New York: McGraw-Hill.
- National Advisory Commission on Civil Disorders
1968 *A Report*. Washington, D.C.: U.S. Government Printing Office.
- Olsen, Ruth and Avery Guest
1977 "Migration and city-suburb status differences." *Urban Affairs Quarterly* 12:523-31.
- Pred, Allan
1966 *The Spatial Dynamics of Urban Industrial Growth: 1800-1914*. Cambridge, Ma.: MIT Press.
- Rose, Harold
1976 *Black Suburbanization: Access to Improved Quality of Life or Maintenance of the Status Quo?* Cambridge, Ma.: Ballinger.
- Rossi, Peter
1955 *Why Families Move*. Glencoe: Free Press.
- Schnore, Leo
1954 "The separation of home and work: a problem for human ecology." *Social Forces* 32:336-43.
1965 *The Urban Scene*. New York: Free Press.
- Sørensen, Annemette, Karl Taeuber, and Leslie Hollingsworth
1974 "Indexes of racial segregation for 109 cities, 1940 to 1970." *Institute for Research on Poverty Discussion Papers*. Madison: University of Wisconsin.
- Spilerman, Seymour
1970 "The causes of racial disturbances: a comparison of alternate explanations." *American Sociological Review* 35:627-50.
1971 "The causes of racial disturbances: tests of an explanation." *American Sociological Review* 36:427-42.
1976 "Structural characteristics of cities and the severity of racial disorders." *American Sociological Review* 41:771-92.
- Stahura, John, C. Ronald Huff, and Brent Smith
1980 "Suburban crime: a structural model." *Urban Affairs Quarterly*. Forthcoming.
- Task Force on Individual Acts of Violence
1970 *Crimes of Violence, Vol. 1*. Washington, D.C.: U.S. Government Printing Office.
- Tobin, Gary
1976 "Suburbanization and the development of motor transportation: transportation technology and the suburbanization process." Pp. 95-112 in Barry Schwartz (ed.), *The Changing Face of the Suburbs*. Chicago: University of Chicago Press.
- U.S. Bureau of the Census
1962 *County and City Data Book, 1962* (A Statistical Abstract Supplement). Washington, D.C.: U.S. Government Printing Office.
1963 *U.S. Census of Population: 1960, Vol. 1*.

- Characteristics of the Population. Washington, D.C.: U.S. Government Printing Office.
- 1971 General Demographic Trends for Metropolitan Areas, 1960 to 1970. Final Report PHC(2)-1. Washington, D.C.: U.S. Government Printing Office.
- 1973a 1970 Census Users' Guide: Part II. Washington, D.C.: U.S. Government Printing Office.
- 1973b City and County Data Book, 1972 (A Statistical Abstract Supplement) Washington, D.C.: U.S. Government Printing Office.
- U.S. Federal Bureau of Investigation
- 1960 Uniform Crime Reports, 1959: Crime in the United States. Washington, D.C.: U.S. Government Printing Office.
- 1961 Uniform Crime Reports, 1960: Crime in the United States. Washington, D.C.: U.S. Government Printing Office.
- 1962 Uniform Crime Reports, 1961: Crime in the United States. Washington, D.C.: U.S. Government Printing Office.
- Wanderer, Jerome
- 1969 "An index of riot severity and some correlates." *American Journal of Sociology* 74:500-5.
- Warner, Sam
- 1962 *Street Car Suburbs*. Cambridge, Ma.: MIT Press.
- Wilson, John
- 1970 "Crime." Pp. 140-51 in Daniel Moynihan (ed.), *Toward a National Urban Policy*. New York: Basic Books.
- Wood, Robert
- 1958 *Suburbia: Its People and Their Politics*. Boston: Houghton Mifflin.

CORRELATES OF DELINQUENCY: THE ILLUSION OF DISCREPANCY BETWEEN SELF-REPORT AND OFFICIAL MEASURES*

MICHAEL J. HINDELANG

State University of New York, Albany

TRAVIS HIRSCHI

State University of New York, Albany

JOSEPH G. WEIS

University of Washington, Seattle

American Sociological Review 1979, Vol. 44 (December):995-1014

This paper reviews the research literature concerning the extent to which studies of delinquency that use official records produce results compatible with studies of delinquency that use self-reports of adolescents. Particular attention is given to sex, race, and social class as correlates of delinquency. The notion that official and self-report methods produce discrepant results with respect to sex, race, and class is largely illusory. In reaching conclusions of discrepancy several techniques have been used in the literature; the most general is the assumption that self-reports and official data tap the same domain of behavior. When the domain limitations of self-reports are recognized (and other illusory techniques are abandoned), the conclusion of general consistency between self-reports and official correlates for sex, race, and class emerges. This consistency and other evidence from victimization surveys, studies of the reliability and validity of self-reports, and studies of biases in criminal justice processing, suggest that both official data and self-reports provide valid indicators of the demographic characteristics of offenders, *within the domain of behavior effectively tapped by each method.*

For 160 years scholars have attempted to solve the crime measurement problem by cataloging sources of possible error in existing techniques, by deriving the facts about crime from theories of criminality, and by simply accepting observed results at face value. About twenty years ago, a new dimension was added to this enterprise. Following preliminary and unsystematic work by Porterfield (1946) and Wallerstein and Wyle (1947), Short and Nye (1957) introduced the self-report method of measuring delinquent behavior. This new method produced results apparently contrary to those produced by established methods. Consequently, it did

not settle the measurement issue. On the contrary, scholars could then catalog sources of error in either of two techniques; they could derive either of two sets of facts from criminological theory; and they could accept either of two sets of facts at face value. In short, the basic results of criminological research remained open to dispute. No simple conclusion about demographic correlates or causes of crime could command acceptance by more than a portion of interested scholars. And so it remains today.

Whatever approach one takes to a criminological issue, its vulnerability to the measurement question quickly surfaces. A recent example is the apparently definitive paper by Tittle, Villemez, and Smith (1978). Drawing on 35 studies and 363 separate estimates of the class/crime relation, Tittle et al. conclude that the assumed negative correlation between social class and criminality is a "myth." They also conclude that the discrepancy between self-report and official results in years prior to 1964 probably reflects class-linked biases in official processing. Given the history of the field, we may safely assume that both of these conclusions will provide little more than a starting point for

* Address all communications to: Michael J. Hindelang; School of Criminal Justice; State University of New York; Albany, NY 12222.

This project was supported by Grant No. MH27778-03 awarded by the Center for Studies of Crime and Delinquency, National Institute of Mental Health, U.S. Department of Health, Education, and Welfare. In connection with this project, published self-report data and ten self-report data sets have been analyzed for the past several years, the results of which are in Hirschi, Hindelang, and Weis (forthcoming). An earlier version of this paper, "The Great SES/Delinquency Debate: Much Ado About Nothing," was read at the 1977 annual meeting of the American Society of Criminology.

future debate.¹ As long as there is disagreement on the methodological and statistical underpinnings of such conclusions, assessments of the empirical evidence, however thorough, will continue to produce ambiguous results.

In this paper we argue that the invention of self-report procedures could have resolved the crime measurement problem by showing consistency in results across methods. We argue further that it did not resolve the crime measurement problem because of continued misinterpretation of self-report findings. Such misinterpretation may be traced to a variety of techniques, all of which create the illusion² of discrepancy between the correlates of official and self-reported delinquency when, in general, no such discrepancy has been demonstrated. These arguments will be illustrated by using sex, race, and social class as examples.

ORIGINS OF THE SELF-REPORT METHOD

In historical context, the self-report method may be seen as a device for studying delinquency in "nondelinquent" populations, where all "official"³ measures of delinquency (e.g., police records, court records, and incarceration) were too stringent to reveal adequate variation. Given this purpose, those constructing self-report instruments could not reasonably include offenses like homicide and rape for which observed variance in a small general population sample would have to be treated as error rather than true variance.⁴ In fact, the requirement that

items produce meaningful variation further skewed self-report instruments toward behavior occurring frequently in "nondelinquent" samples. Although perfectly reasonable from a statistical perspective, such items are almost by definition outside the domain of behavior that elicits official attention.

Early attempts to produce cumulative, unidimensional (Guttman) scales eliminated the very infrequent (and generally more serious) offenses from this already skewed pool. The final Short/Nye (1957) scale items are:

Driven a car without a driver's license or permit.
 Skipped school without a legitimate excuse.
 Defied parents' authority (to their face).
 Taken little things (worth less than \$2) that did not belong to you.
 Bought or drank beer, wine or liquor (including drinking at home).
 Purposely destroyed public or private property that did not belong to you.
 Had sex relations with a person of the opposite sex.

Although they scaled by Guttman criteria, four additional items had to be eliminated by Short and Nye because they were committed too infrequently by their noninstitutional respondents:

Run away from home.
 Taken things of medium value (between \$2 and \$50).
 Taken things of large value (over \$50).
 Used or sold narcotic drugs.

In rankings of offense seriousness by samples of the general population, the seven Short/Nye items retained are virtually off the scale; in one study they do no better than 125th in a list of 140 items (Rossi et al., 1974).⁵ Such offenses, which constitute the core of self-report items widely used into the early 1970s (Hindelang, 1971; Hirschi, 1969), are largely outside the domain even of police contacts (e.g., Wolfgang et al., 1972: Table 5.3). In recent research, there has been a move-

¹ In May, 1979, Elliott and Ageton (1979:25) reported that results from their national self-report survey show that "lower class youth are found disproportionately among high frequency offenders." Elliott and Ageton cite Tittle et al. (1978).

² We do not use the word illusion as synonymous in any way with deception. Rather, we use it to refer to the appearance of inconsistency where it need not or does not exist.

³ Most of the data in this paper using official measures of delinquency are data on arrests or contacts drawn from police files. Occasionally, data relating to court records or incarceration are also referred to as "official" delinquency data.

⁴ For example, Porterfield's (1946:41) results showing one murder in his sample of 200 college men strain credibility. Subsequent self-report researchers have excluded the homicide item and have uncovered no murderers in their samples.

⁵ Breaking a plate glass window in a shop ranked 125th, theft of a book from a store ranked 129th, and repeated truancy ranked 136th. As described in the Rossi et al. (1974) study, these offenses are more serious than the typical offense implicitly described in parallel self-report items.

ment toward the inclusion of more serious items, but even current instruments as a whole are dominated by nonserious delinquent offenses (Elliott and Ageton, 1979; Farrington, 1973; Gold and Reimer, 1975; Berger and Simon, 1974).

Even apparently serious items in current self-report instruments turn out on inspection to allow the respondent to report behavior that would be hard to construe as serious delinquency. Gold (1970:25), for example, used a probe technique to screen out nonchargeable offenses. The remaining chargeable offenses were then scored for frequency (F) and seriousness (S). One respondent, *among the 10% most delinquent in Gold's sample*, had scores of $F = 12$ and $S = 10$. Gold (1970:30) summarizes this youth's delinquent activities.

... [at age 12] he and a friend had knocked down a tent in a neighbor boy's back yard—the aftermath of an earlier mud-throwing fight.

That winter, he had shoplifted gum a few times from a neighborhood store.

On turning 13, he had begun to lie regularly about his age to cashiers at movie theaters.

In June, 1961, he had shoplifted a cartridge belt from a hardware store and later given it to a friend.

The month after, he had taken an address book from a department store.

In the summer of 1961, he and a friend had helped themselves to several beers from his friend's refrigerator.

In late August, 1961, he and another friend had twice raided an orchard not far from R's home, taking ripe pears and unripe apples and grapes. They ate the first, and threw the rest at various targets.

In September, 1961, he had lifted a hunting knife from a sporting-goods store just for something to do. "We took it back the next day, snuck it back in."

He regularly carried a hunting knife under his jacket "for protection" when he went collecting Friday nights on his paper route.

All subsequent discussion of self-report results should be interpreted with Gold's serious delinquent in mind: "more serious" refers to the upper part of a very limited seriousness range. When the reader encounters a statement such as "class is uncorrelated with delinquency," it is safe to assume that as delinquency has

been measured by self-reports, the level does not generally exceed that illustrated by Gold's case history of one of his most delinquent boys. Regardless of how often it is said that self-reports measure primarily trivial offenses (e.g., Gold, 1966), it is easy to forget that they do. Self-report offenses are routinely treated as equivalent to official offenses in comparing correlates of delinquency (e.g., Tittle et al., 1978; Elliott and Voss, 1974). When the results using the two criteria are inconsistent, it seems to follow that one or both measurement procedures is faulty. An alternative interpretation remains: it may be simply inappropriate to compare the correlates of trivial and serious offenses. In fact, the most general technique for creating the illusion of discrepancy between self-reports and official statistics is to imply or state that both tap the same domain of "chargeable" offenses.⁶

The domain of delinquent offenses has two critical components relevant to comparison of methods. The first relates to behavioral content or type of offense. In Uniform Crime Report (UCR) arrest data, the most commonly used distinction is between violent and property offenses (a distinction that produces important differences in demographic correlates); in self-reports, distinctions often relate to offense types such as theft, property damage, drugs, school offenses, and violence. The second relates to seriousness, both within (e.g., amount of theft) and across (e.g., school versus violent) offense types. Seriousness is often judged on the basis of harm to the victim or potential adverse consequences to the offender (e.g., in the penal code). These methods of assessing seriousness generally produce highly consistent results across population subgroups (Sellin and Wolfgang, 1964; Rossi et al., 1974). The consequence of a failure to take such domain considerations into account is an undifferentiated comparison of self-report and official results.

⁶ Actually, self-report results are often argued by self-report researchers to measure delinquent behavior, while official data are said to measure the actions of officials. This suggests that despite their obvious domain limitations, self-report results are superior to official results, because they alone tap the appropriate domain.

Table 1. Sex Ratios for Commonly Used Self-Report Items, Ranked by Magnitude of Mean Sex Ratio

	Range	Mean	Median	Number of Samples ^a
Runaway	.35-1.43	.96	1.00	13
Drink	.85-1.75	1.28	1.28	20
Truancy	1.06-1.91	1.34	1.28	12
Theft LT \$2	1.16-2.05	1.63	1.75	12
Drive without license	1.08-3.32	1.73	1.50	8
Sex relations	1.51-83.86 ^b	2.76	2.86	7
Theft \$2-\$50	1.48-5.03	2.79	2.70	12
Damage/destroy property	1.71-5.15	3.13	2.92	14
Take car	1.48-13.26 ^c	3.27	3.37	15 ^c
Gang fight	.92-4.60	3.61	3.28	11
Beat up/assault	1.17-6.50	3.64	3.61	10
Theft GT \$50	1.43-6.60	3.86	3.68	11
Strong arm	1.00-8.00	4.54	2.87	10

^a The samples on which this table is based are reported in: Akers (1964); Columbano (1974); Elliott and Voss (1974); Hirschi (1969); Kratcoski and Kratcoski (1975); Short and Nye (1958); Walberg et al. (1974); Gold and Reimer (1975); Gold (1970); Hindelang (1971); Wechsler and Thum (1973); Slocum and Stone (1963). Where the published data were reported by age group, race, or geographic region we have computed more than one ratio.

^b The mean value excludes an extreme outlier of 83.36 (Porterfield, 1946).

^c The mean value excludes an extreme outlier of 13.26 (Walberg et al., 1974).

The trivial items in self-report scales swamp more serious items when, as is common, global simple sum scales are used. To the extent that the correlates of serious items differ from the correlates of trivial items, global scales will reflect the correlates of trivial delinquency. Similarly, to the extent that the correlates of certain *types* of delinquency differ, global scales will mask these differences.

CONTENT, SCORING, AND CORRELATES OF SELF-REPORTS

Sex

When one decomposes self-report instruments and examines the correlations of individual items with external variables, one is immediately struck by the variation in the results. Sex differences in self-report data are highly contingent on item content. If we take into account the content and the limited seriousness tapped by self-report items, the pattern of this variation resembles patterns in official data. Variation in these differences is illustrated in Table 1 where commonly used self-report items are shown. Significantly, the lowest mean sex ratio in the table is for running away (.96); this ratio in UCR arrest data on juveniles has hovered around 1.0 for the years covered by these

data.⁷ Another possible comparison is for "beat up/assault." As Table 1 shows, the mean sex ratio in self-report studies is 3.6, which is similar to that for "other assault" in the UCR (e.g., 1968=5.0; 1972=3.5). Significantly, precise comparisons of standard self-report items with other UCR offenses are not possible. However, those items even crudely comparable to UCR categories produce roughly comparable results. For example, the sex ratio for the self-report offenses of theft of items worth more than \$2 is about 3.3 and that for larceny-theft in UCR data on juveniles has fallen from 4.7 in 1964 to 2.5 in 1976. When a violence component is added to the theft (strong-arm), the self-report mean sex ratio is 4.5, whereas the sex ratio for robbery in UCR data has not been lower than 12 in recent years. Self-report "strong-arm" offenses are not equivalent to UCR robbery offenses; however, given the progression in the size of the mean sex ratios shown in Table 1 as the items move from theft of less than \$2, to theft of \$2-\$50, to theft of more than \$50, to strong-arm, it seems reasonable to suppose that if self-report items picked up

⁷ Where possible from published self-report literature, we have used prevalence ratios; some of our ratios are, however, based on incidence data. UCR data reflect the incidence of arrest.

Table 2. Sex Ratios in Indexes of Self-Reported Delinquency

	Ratio	Study
Any delinquency (Index F)	1.64	Gold (1970)
"High" delinquency (Index F)	11.40	
Any seriousness (Index S)	2.38	
"Very high" seriousness (Index S)	12.00	Elliott and Voss (1974)
Any delinquency (%)	1.03	
Nonserious offenses (\bar{X}), Jr. High	1.48	
Nonserious offenses (\bar{X}), Sr. High	1.58	
Serious offenses (\bar{X}), Jr. High	2.66	
Serious offenses (\bar{X}), Sr. High	2.89	
Scale scores, 8 Nye/Short items (\bar{X})	2.11	Akers (1964)
Any theft (%)	1.94	Dentler and Moore (1961)
High theft (%)	2.26	
"Significant" delinquency (\bar{X}) 1967	1.97	Gold and Reimer (1975)
1972	1.47	
Seriousness scale (\bar{X}) 1967	2.77	Hindelang (1973)
1972	2.82	
1 or more recent acts (%)	1.72	
3 or more recent acts (%)	3.88	
5 or more recent acts (%)	6.00	

serious robberies the sex ratio would move toward that in the UCR.⁸

Sex ratios on the order of 2:1 (or less) are frequently found for global self-reported delinquency scales (see Table 2). These are often compared with official data that show a ratio on the order of 4 or 5 to 1. Since the magnitude of the sex ratio depends upon the frequency and seriousness cutting points used in self-report research, and since officials also take such considerations into account in deciding whether to process offenders—both frequency (prior record) and seriousness are factors affecting official decision (Wolfgang et al., 1972: chap. 13)—it is misleading to compare self-report and official results ignoring such considerations (see Reiss, 1975).

The content, seriousness, and fre-

quency considerations that help to account for apparent discrepancies between self-report and official results with respect to sex need also be examined for race, the correlate that consistently produces the largest discrepancy between self-report and official results.

Race

An abundance of studies use official data to compare blacks and whites (e.g., Eaton and Polk, 1961; Wolfgang et al., 1972; Kelley, 1977). All show marked racial differences, with blacks substantially overrepresented among offenders. While self-report research has not often attended to race—in part, because self-report samples tend either to be drawn from small town white populations or to be nationally representative, in which case there are too few blacks for meaningful comparisons—existing data raise serious questions about the compatibility of official and self-report results. In fact, until very recently the range of sex-specific black to white ratios found in self-report samples did not overlap with the range of ratios found in official data. In general, self-report studies simply have not found substantial racial differences (Chambliss and Nagasawa, 1969; Epps, 1967; Gold, 1966; Gould,

⁸ We should note here that as seriousness increases, the proportion of general adolescent respondents reporting involvement generally diverges from .5; hence the variance of more serious items is typically smaller than that for less serious items. The result is that ratios tend to increase somewhat with skewness, even though *absolute* percentage differences in self-report involvement (e.g., between sexes) may be similar for less serious and more serious items. However, in these data, the odds ratios for less serious and more serious items are different, indicating differential effects by seriousness level. Such differences are reflected in our simple ratios.

1969; Hirschi, 1969; Lively et al., 1962; Williams and Gold, 1972; Gold and Reimer, 1975).

The hypothesis that blacks are no more likely to engage in illegal behavior than whites but are discriminated against by the police may be plausible, but the small or nonexistent racial biases shown in studies of differential selection (e.g., Wolfgang et al., 1972: Table 13.5) simply cannot account for the large racial differences in offending suggested by official data (e.g., Wolfgang et al., 1972: Table 5.3). Furthermore, an independent third source of data, reports of victims on the race of offenders in victimization surveys, produces results that parallel official data for common-law personal crimes (Hindelang, 1978).

How, then, can we account for the "inconsistency" of self-reports with official and victimization data? We hypothesize that this discrepancy, like the apparent sex discrepancy, is attributable to the great weight self-report instruments give to minor offenses. Consistent with this hypothesis, although Hirschi (1969) reports no significant relation between total self-reported delinquency and race, examination of the race differences in three individual theft items shows progressively greater black involvement as the seriousness increases. For theft of items worth less than \$2, theft of items worth \$2-\$50, and theft of items worth more than \$50, the black to white prevalence ratios are .9, 1.24, and 1.75, respectively. However, because the percentages of all respondents reporting involvement in the acts are 51, 21, and 9, respectively, the simple sum scale is dominated by the least serious item, when only the two more serious items, in which blacks report more involvement, are likely to come to the attention of the police.⁹ Compatible findings are reported by Williams and Gold (1972) and Elliott and Voss (1974), where slightly larger racial differences are found in offenses they classify as serious.

Data clearly indicating that self-report

items approaching the seriousness of offenses in police records (particularly violent offenses) reveal racial differences are provided by Berger and Simon's (1974) study of more than 3,100 adolescents in Illinois. Using factor analysis, they created homogeneous subscales before making racial comparisons; fortunately, this procedure had the consequence of separating the more serious items from the rest of the set. Their normal deviance factor, containing such items as "cheating on exams," "skipping school," and "drinking," showed a very high proportion of all respondents reporting involvement, with a general tendency for whites to report slightly greater involvement than blacks. The theft scale, made up of standard self-report items such as "property damage," "theft of little things," and "keeping or using stolen goods" revealed no racial differences. In contrast, their violence scale, which includes items such as "used a weapon," "been in a gang fight," and "strong-armed robbery," produced consistent black/white differences. Among males, the ratio of black to white percentages is about 2:1; and among females the ratios tend to be higher (nearly 3:1) than the male ratios, a finding consistent with official data (Berger and Simon, 1974:151).

If the general argument that blacks and whites differ in *serious* delinquent behavior but are more similar in less serious forms of delinquent behavior is correct, then this phenomenon should be reflected, at least to some extent, in official data as well. Table 3 presents data from UCR arrests for 1976. This table shows the ratio of black arrest rates to white arrest rates for selected UCR crimes.

Consistent with the argument outlined above, the ratio of black to white arrest rates is much larger for the more serious index offenses (3.49:1) than for the less serious nonindex offenses (1.71:1). Noteworthy is the finding that among index offenses the ratio for violent crimes is substantially larger than that for property crimes (9.08:1 vs. 3.14:1). Not only are the former more serious, but they also have a clearance rate two and one-half times greater than the latter.* Thus, assuming these arrest data by race are pro-

⁹ See Gottfredson and Hindelang (1976) regarding the association between the victim's likelihood of reporting an event to the police and the value of stolen property.

Table 3. Ratio of Black to White Arrest Rates of Persons under 18 Years of Age, for Selected Offenses, United States, 1976^a

Index Offenses	3.49
Violent	9.08
Property	3.14
Nonindex offenses	1.71
Aggravated assault	5.69
Other assault	4.47
Forcible rape	9.64
Other sex offenses (excludes forcible rape and prostitution)	3.22
Vandalism	1.23
Driving under the influence	.29
Drunkenness	.56
Runaways	.94

^a The ratios in this table were derived by taking the black to white raw arrest ratios and adjusting them by the black to white ratio for the general population (1:8).

Source: Kelley (1977: Table 35).

portional to offending behavior by race, black youths are probabilistically more likely than white youths to be arrested, simply because violent crimes have higher clearance rates than do property crimes.

Other arrest data shown in Table 3 provide support for our hypothesis that the general failure of self-report studies to parallel official data on race may be attributable to the more trivial nature of self-report than official items. Comparing the ratios for aggravated and "other" assaults it can be seen that, relative to whites, blacks are slightly more often arrested for the former (more serious) offense than the latter (5.69 vs. 4.47); similarly, comparing black to white arrest rate ratios for rape and "other" sex offenses, blacks are arrested relatively more often for the more serious rape offenses than for "other" sex offenses (9.64 vs. 3.22).

In Table 3, it is also possible to examine items commonly found in self-report instruments—vandalism, drunkenness, driving under the influence, and running away. For these petty offenses, the black/white ratios are much smaller (or in most cases reversed, 1.23, .29, .56, and .94, respectively) than those for violent or property index offenses. The overall pattern of findings in Table 3 is therefore compatible with the hypothesis that the general failure of self-report studies to find the overrepresentation of blacks relative

to whites in official data is attributable in large part to an overabundance in current self-report instruments of items tapping less serious, more numerous offenses.

Data available from the national victimization survey being conducted by the Bureau of the Census for the Law Enforcement Assistance Administration also shed light on the relationship between the seriousness of the offense and the race of the offender. In these surveys, about 130,000 persons are interviewed twice a year regarding the personal crimes of rape, robbery, assault, and larceny from the person. Although these offenses are generally much more serious than those elicited by self-report instruments, there is a wide range of seriousness in the incidents reported to survey interviewers.¹⁰

The data in Table 4 from the national survey for 1976 include only victimizations in which the offender was reported by the victim to have been under 18 years of age. Victimization have been scored for seriousness using the Sellin-Wolfgang (1964) method, and weighted to be representative of the United States as a whole. Attending first to the total row in Table 4, it can be seen that black offenders account for almost half of the personal victimizations reported to survey interviewers. When it is recalled that blacks in the United States account for less than 15% of the juvenile population, it is clear that, for these offenses, black youths are substantially overrepresented among offenders in relation to their representation in the general population. Despite the heterogeneity of these events with respect to seriousness, they are on the whole considerably more serious than the events typically elicited by self-report instruments (most meet the Uniform Crime Report criteria for Part I offenses). For the

¹⁰ For example, it has been found that about half of the incidents reported involved neither injury nor financial loss to the victim—i.e., they were attempts (Hindelang, et al., 1978: chap. 2). Nonetheless, even these *relatively* minor events fall within UCR definitions. Similar to the problem faced by self-report instruments, each offense category contains a variety of offenses that are heterogeneous with respect to seriousness. Thus, a strict test of our hypothesis would require that self-report instruments specify rather carefully the behavior included even within a serious offense category (e.g., robbery).

Table 4. Perceived Race of Offender in National Crime Survey Victimization, in which Offenders were Perceived to be under 18 Years of Age, by Seriousness Level, United States, 1976^a

Seriousness ^b	Perceived Race of Offender					
	White		Black		Total	
1	(588,126)	50%	(589,480)	50%	(1,177,606)	100%
2	(626,849)	53%	(546,245)	47%	(1,173,094)	100%
3	(457,178)	53%	(410,203)	47%	(867,381)	100%
4	(89,263)	33%	(178,667)	67%	(267,930)	100%
Total	(1,761,415)	51%	(1,724,594)	49%	(3,486,009)	100%

^a Includes only offenders perceived to be under 18 years of age. Each incident is weighted according to the number of offenders involved. Excludes offenders of "other" races, groups of offenders of mixed races, and incidents in which offender characteristics were unknown to the victim.

^b Sellin-Wolfgang seriousness weights were recoded as follows: 0-1 = 1; 2-3 = 2; 4-5 = 3; 6 or more = 4. See Sellin and Wolfgang (1964: Appendix F) for scoring details.

less serious victimizations, blacks account for about the same percentage of all offenders as do whites. More important, however, for the most serious victimizations—those most likely to be reported to the police (Gottfredson and Hindelang, 1979)—blacks account for two-thirds of the offenders. Once again, these data are congruent with the hypothesis that self-reports fail to find racial differences in large part because self-report instruments generally do not pick up the most serious kinds of street crime. The compatibility of victimization survey results and UCR arrest data (Hindelang, 1978) severely damages the hypothesis that arrest data merely reflect racial biases inherent in police practices.

Up to this point, we have shown that various sources of data on delinquency are consistent when attention is given to obvious differences in content. As noted, it would be unreasonable to expect greater correspondence for sex and race than that actually observed, owing to domain limitations of self-report instruments used to date. With this background, we turn to social class, where an abundance of "illusions of discrepancy" may be found.

Social Class

Unlike sex and race, social class data are not available for either UCR arrestees or for offenders in victimization surveys. Thus, if understanding the relationship of social class to serious offending is our aim, data limitations are much more severe for social class than for sex or race.

Until publication of "The Myth of Social Class and Criminality" (Tittle et al.,

1978) the dominant view in the field was that summarized by Gordon (1976:201): "One of the most thoroughly documented known crime and delinquency relationships is that with socioeconomic status."¹¹ Tittle et al. (1978) take strong exception to this position for data from recent years. They note that self-reports have always shown a near-zero relationship with social class while studies using official statistics have shown moderate to strong inverse associations with class in the pre-1964 period. This leads them to the conclusion that there must have been class-linked biases in criminal justice processing in the earlier period. This suggestion (and data supporting it) is not new. Indeed, it was suggested by the first study to compare the SES-delinquency relationship for self-report and official criteria (Short and Nye, 1957).

Short and Nye compared the social class distributions of high school and training school boys. The resultant 2 × 4 table (training school vs. high school by four social class categories) produced a contingency coefficient of .45. Among the high school boys, the contingency coefficient between social class and *self-reported* delinquency (a dichotomized global scale) was .10, a nonsignificant relation ($p = .3$). This shift in the contin-

¹¹ In support of this statement Gordon lists 23 studies published in the three previous decades, including many of the better-known works in the field. Close inspection reveals that only four of these are American studies that allow estimation of individual-level relations; only two of these permit direct comparisons between self-reports and official data with respect to the SES-delinquency relationship.

gency coefficient from .45 to .10, when the criterion became self-reported rather than official delinquency (i.e., institutionalization), had significant implications for criminological research and theory.

On the level of *theory*, these results provided fuel to the then nascent labelling and conflict approaches to delinquency. They did much to quicken interest in *research* on official processing of offenders. More important for present purposes, they established the expectation that *valid* self-report procedures will often produce results contrary to official data. Ironically, the Short/Nye data do not support this expectation when the contingency coefficient (or any other marginally dependent measure of association) is used appropriately as the criterion. On the contrary, the self-report and official results show remarkable consistency with respect to estimates of the class-delinquency association in the general adolescent population.

This fact was overlooked because of two factors that contributed to the illusion of discrepancy between official and self-report results. The first, discussed in another context by Tittle et al. (1978), was the implicit comparison of the Short/Nye self-report results with previously established ecological-level¹² class delinquency relations, which often ran as high as $-.7$ or $-.8$, depending on the indicator of class (e.g., Shaw and McKay, 1942). A greater ecological than individual level association is expected even when precisely the same delinquency measure is used, simply as a function of the aggregation of individual level data. Hence, a similar discrepancy when *different* criterion measures are used need say nothing about the compatibility of the measures. Second, the contingency coefficient used by Short and Nye substantially overestimated the magnitude of the relation between SES and delinquency by using the official criterion (institutionalization). Because C is marginally dependent, it is misleading to compare an association based on the general high school population with an association based on an unweighted aggregation of institutionalized and general

population adolescents. In the table that produced a contingency coefficient of .45, the institutionalized boys ($N = 146$) constituted almost 15% of the total. This table (Short and Nye, 1957: Table 1) misleadingly suggests that 39% of all lower class boys, and even 5% of the highest class, were in a training school.

A reasonable estimate of the prevalence of institutionalization in training schools by age 18 is approximately 1% for white males (Gordon, 1976: Table 2). At any given time the proportion of the general adolescent population in training schools is much less than 1%. For illustrative purposes, we recalculated the contingency coefficient in the Short/Nye data allowing the training school population to be 1% of the total sample. Under these conditions, the coefficient drops from .45 to .11, which leaves class no better able to predict official than self-reported delinquency ($C = .10$) by this criterion.¹³

Two additional studies are often cited as evidence of discrepancy in the association of social class with self-reports as compared to official data. Williams and Gold (1972) present data collected by Gold in 1967. In their paper they utilize a major device for creating the illusion of discrepancy: despite the fact that the official and self-report data are consistent, they treat them as discrepant. Williams and Gold make an apparently important distinction between "delinquent behavior" (as measured in self-reports) and "official delinquency." In justifying such a distinction they focus on the SES-delinquency relation.

The often cited finding of official delinquency as a lower-class phenomenon is a product of the above mentioned filtering process. This finding, *which is by our defini-*

¹² See Nye et al. (1958) for a list of empirical studies dominated by ecological research.

¹³ For those concerned with the modifiability of measures of association as a result of manipulating the marginals, it is important to note that our secondary analysis of the raw data from this study revealed that the relation between class and *self-reported* official delinquency (measured by "Have you ever been arrested and convicted . . . ?") in the Short/Nye data ($C = .06$) is even smaller than our .11 estimate of the relation between official delinquency and class. To the extent that researchers accept self-reports of delinquent behavior as reliable and valid, it follows that self-reports of official records are at least as reliable and valid.

tion quite valid, now takes on new meaning: official identification of and response to delinquent behavior shows a strong relationship to lower-status juveniles. However, it does not necessarily mean that lower status youths are involved in more delinquent behavior than any other social status group. (Williams and Gold 1972:210, emphasis added)

The premise of Williams and Gold's (1972:e.g., 210, 211, 217) article states that official and self-report data produce different results. Throughout their discussion, they use class to illustrate differences between the correlates of official delinquency and delinquent behavior. Nevertheless, they actually report, virtually without comment, a gamma of $-.02$ (1972:225) for occupational prestige and frequency of police records, and, for the same white male group, gammas of $.05$ (frequency) and $.12$ (seriousness) for occupational prestige and self-reported delinquency. Neither the frequency of self-reported delinquency nor the frequency of police records was significantly correlated with social status among white males.¹⁴ Contrary to the thrust of Williams and Gold's discussion and the title of their paper, the SES-delinquency correlations for males in the 1967 National Survey of Youth do not depend on the method of measurement.

The presentation format used by Elliott and Voss (1974: Table 4-7) illustrates yet another analytic technique that has fed the illusion of discrepancy: a failure to disaggregate data properly in order to examine potentially confounded effects. Elliott and Voss present data on police contacts per 100 self-reported delinquent behaviors that show marked differences by class status. For example, in the highest of five SES classes there were 1.692 police contacts per hundred self-reported offenses compared to 7.382 in the lowest category, a finding apparently strongly supportive of the discrepancy position. That is, in the absence of differential self-report measurement error by class and differential selection by the police, these ratios would

be expected to be identical across classes. However, these data are problematic because the Elliott/Voss table (1974: Table 4-7) is not disaggregated by either sex or ethnicity (closely associated with delinquency and/or social class).¹⁵ Reanalysis of the Elliott and Voss raw data shows, in fact, that ethnicity and sex were confounding the relationship between social class and these ratios.¹⁶ One-way analysis of variance of the ratios by social class within homogeneous sex-ethnicity groups reveals no significant effect of social class on these police-selection ratios. Again, the illusion of discrepancy turns out to be just that.

The recent systematic and thorough review by Tittle et al. (1978) concludes, in part, that a discrepancy between self-report and official results is evident. Unfortunately, their analysis suffers from shortcomings that compromise its conclusions. Not only do the authors accept self-report results at face value and assume that their domain is comparable to that in official data, which we have argued here is inappropriate, but they also use an analytic technique which can produce the illusion of discrepancy when none necessarily exists. In their secondary analysis of the published literature, Tittle et al. use regression analysis to account for variation in the magnitude of the class/crime association (gammas) as a function of such variables as the nature of the crime criterion (self-report vs. official), year of data collection, and sample size. Rather than making direct comparisons of self-report and official results, when both were available in a single study, Tittle et al. rely upon statistical adjustment to control for the effects of other variables:

Given instances using two samples of exactly the same type and size, drawn from

¹⁴ The values shown for the Gold subjects in our Table 5, discussed below, differ from these coefficients primarily because the latter are based on a trichotomy for class and grouped data on the F scale.

¹⁵ A small number of adolescents with extreme scores on the numerator and/or the denominator of these ratios may have disproportionately affected the mean ratios presented by Elliott and Voss (1974).

¹⁶ Unfortunately, the original investigators provided us with data regarding official delinquency records only for part of the period covered by their study. These data include about 50% of the official delinquencies recorded for the full period of the original study.

precisely the same areas in a given year and employing the same number of defined social classes, the equation shows that we may expect the study employing official statistics to produce a gamma showing a .10 greater negative association for the same relationship than an instance employing self-report data (Tittle et al., 1978:649).

This conclusion suggests much more precise control of the dimensions in the regression equation than is in fact possible. Most self-report studies have been conducted in the period (post-1970) when official studies had virtually ceased (Tittle et al., 1978: Table 3). Nonetheless, some direct comparisons are possible. All American studies allowing such comparisons are shown in Table 5.

The oldest data in Table 5, collected in 1957 by Reiss and Rhodes (1961), show identical asymmetric Somers's d 's ($-.16$) using the self-report or the official criterion to assess the class/delinquency association.¹⁷ In contrast, the Tittle et al. comparison for this period (1950-59)—based on three studies using a self-report criterion and seven using an official criterion—showed very divergent mean gammas of $-.04$ and $-.43$ for the self-report and official criteria, respectively. (In terms of gammas, the Reiss and Rhodes coefficients for self-report and official data are $-.36$ and $-.33$, again virtually identical).

Most of the data in our Table 5 are from the period (1960-69) in which the Tittle et al. comparisons show the mean official gamma to be $-.22$ and the mean self-report gamma to be $-.11$. Our direct comparison of results shows that the two criteria produce very similar associations. In this period, the mean official Somers's d is $-.02$ (mean gamma = $-.11$) and the mean self-report Somers's d is $.01$ (mean gamma = $.00$).¹⁸ In both the Tittle et al.

indirect comparisons and in our own direct comparisons, the differences in the size of the class-crime association using the official and the self-report criterion are slight for the 1960-69 period; in the 1950-59 period, however, the large discrepancy reported by Tittle et al. is not replicated using direct comparisons. Owing particularly to official/self-report differences in the domains tapped, these comparisons must be viewed as extremely crude. In light of this and the general consistency shown in Table 5, conclusions of discrepancy between the two measures are at best weak.

Our earlier admonition that omnibus scale comparisons can be misleading should not be ignored. Unfortunately, however, the fact is that with respect to social class, adequate data for making offense-specific comparisons among the social classes are simply unavailable. There is no published source of police data that is large enough to permit class comparisons of the kind shown for race in Table 3; there is no source of self-report data that permits reliable interclass comparisons for categories of serious crime. For example, Williams and Gold's (1972) data represented in the Tittle et al. table and in our Table 5 have both official and self-report data from the mid to late 1960s. However, in this sample of 847 respondents, only 4% or 34 males and females had police records. In the Elliott and Voss sample of 2,617 respondents, although 26% had records of offenses more serious than traffic infractions, nearly nine out of ten of these were for petty theft, running away, vandalism, truancy, and liquor offenses. In light of the variations by offense in the magnitude of sex and race relationships in both sources of data, omnibus comparisons are far too crude to permit confident conclusions that discrepancy exists.

¹⁷ In $r \times 2$ tables where the independent variable is the dichotomy neither gamma nor Somers's asymmetric d is marginally dependent. In 3×3 and larger tables both gamma and asymmetric Somers's d are marginally dependent (Somers, 1962:808). Gamma has the disadvantage of being biased upwards by small cell counts which often result from severe skewness. Somers's d is less sensitive to small counts in some cells.

¹⁸ Interestingly enough, in the 1960-69 period the gammas from our direct comparisons in studies

where both self-report and official data are available are smaller than those reported by Tittle et al., which illustrates once again that the magnitude of the association between class and delinquency is sufficiently variable from one sample to another that a conclusion of discrepancy cannot be predicated on an assumed value, even if this value has been estimated from a regression model based on a large number of data points.

Table 5. Percent with Police Record of Delinquency and Percent with Self-Reported Delinquency,^a across Social Class (Secondary Analyses of Raw Data)

Study	Date of data collection	Sample subgroup	Social class indicators	Social class groups			Gamma	Asymmetric Somers's d
				Blue Collar	White Collar	High		
Reiss and Rhodes	1957	White males (n = 7963)	Father's occupation	6 (4,661)	3 (3,302)		-.33	-.16
				10 (98)	5 (59)		-.36	-.16
Elliott and Voss	1963-1967	White males (n = 974)	Hollingshead	Period I: Non-serious Official (1 or more)				
				16	12	13	-.04	-.01
				Self-report (5 or more)				
				34	27	26	-.04	-.03
				Period I: Serious Official (1 or more)				
				6	5	4	-.09	-.01
				Self-report (2 or more)				
				28 (131)	24 (389)	21 (454)	-.12	-.07
				Period II: Non-serious Official (1 or more)				
				7	10	8	-.04	-.01
				Self-report (8 or more)				
				36	26	27	-.04	-.03
Mexican-American males (n = 178)				Period I: Serious Official (1 or more)				
				4	2	2	-.05	-.00
				Self-report (3 or more)				
				28 (105)	23 (346)	27 (412)	-.01	-.00
				Period I: Non-serious Official (1 or more)				
				27	19	12	-.28	-.09
				Self-report (5 or more)				
				35	31	31	.05	.04
				Period I: Serious Official (1 or more)				
				9	8	0	(-.39)	-.05
				Self-report (2 or more)				
				38 (66)	28 (80)	16 (32)	-.26	-.16

Table 5. continued

Study	Date of data collection	Sample subgroup	Social class indicators	Period II: Non-serious	Social class groups	Gamma	Asymmetric Somers's d
				Official (1 or more)	14 12 6	-.19	-.04
				Self-report (8 or more)	19 27 39	.25	.20
			Serious	Official (1 or more)	3 2 0	-.38	-.02
				Self-report (3 or more)	21 24 16 (58) (70) (31)	.03	.02
		Black males (n = 89)	Period I: Non-serious	Official (1 or more)	14 21 13	.04	.01
				Self-report (5 or more)	29 37 44	.14	.10
			Serious	Official (1 or more)	20 13 12	-.21	-.05
				Self-report (2 or more)	26 26 25 (35) (38) (16)	-.02	-.01
			Period II: Non-serious	Official (1 or more)	6 5 13	.23	.04
				Self-report (5 or more)	23 24 29	.18	.15
			Serious	Official (1 or more)	11 8 12	-.03	-.01
				Self-report (3 or more)	26 30 36 (31) (33) (14)	.01	.00

Table 5. continued

Study	Date of data collection	Sample subgroup	Social class indicators	Social class groups			Gamma	Asymmetric Somers's d
Hirschi	1964	White males (n = 1430)	Father's occupation	29	28	20	-.16	-.06
				Official (1 or more)				
		Black males (n = 720)		27	24	21	-.03	-.02
				Self-report (3 or more)	(463)	(501)		
Gold	1967	White males (n = 357)	Father's occupation	55	51	44	-.14	-.07
				Official (1 or more)				
				28	30	26	-.01	-.01
				Self-report (3 or more)	(187)	(121)		
				5	6	6	.09	.01
				Official (1 or more)				
				36	35	29	-.02	-.01
				Self-report (frequency)	(128)	(103)		

^a Self-reported delinquency cut-off points were selected to be as close as possible to the 75th percentile on the delinquency distribution. Measures of association shown are based on the full tables (usually 3x4).

^b Reiss and Rhodes (1962: Table 1), excluding truancy and traffic offenses.

^c Derived from Reiss and Rhodes (1962: 732).

In sum, although illusions of discrepancy abound, we are hard-pressed to locate persuasive evidence that self-report and official methods produce discrepant results. Our conclusion is consistent with studies of the psychometric properties of self-report measures of delinquency. In terms of reliability, many studies indicate that test/retest or split-half measures of the reliability of self-reports are on the order of .9 (Kulik, Stein, and Sarbin, 1968; Dentler and Monroe, 1961; Elmhorn, 1965). Although validity is inherently more difficult to establish, a variety of approaches to this question have produced generally consistent results. Studies using the nominated or known group method (Nye, 1958; Erickson and Empey, 1963), concurrent checks of official records (Hardt and Peterson-Hardt, 1977; Elliott and Voss, 1974; Farrington, 1973; Erickson, 1972; Kulik, Stein and Sarbin, 1968) and reports of informants (Gold, 1970), have found self-reports to have considerable validity.¹⁹ Thus, in terms of the standard criteria of reliability and validity, self-report measures of delinquency are not obviously defective *within the domain of content they tap*.

If the domain limitations of self-reports may be safely ignored, if the results for a sample of individuals may be compared with results from areal units or with improperly weighted aggregates, if standard disaggregation procedures may be ignored in analysis, and if assertions contrary to data presented are accepted, then, and only then, it seems to us, is the conclusion of discrepancy between self-report and official results warranted. Since these procedures are not acceptable, we believe the conclusion of discrepancy is not justified by currently available evidence.

In short, we believe the evidence on the crime measurement issue is now sufficient to allow resolution of many of the apparent inconsistencies among various measures of criminality. This evidence suggests to us that: (1) official measures of

criminality provide valid indications of the demographic distribution of criminal behavior; (2) self-report instruments typically tap a domain of behavior virtually outside the domain of official data; (3) within the domain they tap, self-report measures provide reliable and valid indicators of offending behavior; (4) the self-report *method* is capable of dealing with behavior within the domain of official data; and (5) in practice, self-report samples have been inadequate for confident conclusions concerning the correlates of offending behavior comparable in seriousness to that represented in official data.

IMPLICATIONS

The reaction to essentially illusory "inconsistencies" between the correlates of self-report and police data has taken one of two general forms: either self-report methodology has been rejected, or sex, class, race, and other biases have been imputed to criminal justice system representatives. The first of these reactions is inconsistent with evidence of the basic reliability and validity of the self-reported method. But as long as discrepancy is accepted, the conclusion that self-reports are reasonably reliable and valid will merely shift attention to official data as the probable source of discrepancy. Of course, the hypothesis that the procedures producing official data are biased against the less powerful segments of society antedates self-report research (e.g., Bonger, 1916). It seems fair to say, however, that the major impetus behind empirical studies of the differential selection of delinquents by officials has been the lack of a substantial relationship between social class and race on the one hand and self-report measures of delinquency on the other. Interestingly enough, studies of the administration of juvenile justice have failed to locate sufficient bias against powerless groups in official processing to account for their higher rates of criminality. Once the seriousness of the instant offense and prior record of the offender are taken into account, apparent class bias plays only a relatively minor role in the generation of official data (Wolfgang et

¹⁹ The polygraph study of Clark and Tift (1966) is often cited as evidence of validity. We are in essential agreement with De Fleur (1967) that because of its design, this study provides evidence only about reliability.

al., 1972, Table 13.5; Cohen, 1975; Terry, 1967; Hohenstein, 1969). Our earlier analyses suggested that no class bias should have been expected, since direct comparisons reveal little or no self-report/official discrepancy, and the bias uncovered by processing studies is not sufficiently strong to account for differences found in official data for race and sex.²⁰

Consistent with these findings, comparisons of UCR arrest data with victimization data for race and sex (Hindelang, 1978; 1979) have shown remarkable consistency. As noted above, because official data are inadequate for making reliable estimates of the substantive class-official data relation, it is premature to conclude that there is no relationship, except for those minor offenses measured reliably in typical (i.e., Short/Nye type) self-report scales. For offenses that are likely to result in deprivation of liberty (i.e., UCR index level offenses) the class-crime relationship simply has not been examined adequately. If class-linked criminal justice system biases are relatively small for serious common-law offending, the heavy overrepresentation of poor and uneducated persons in jails and prisons (e.g., LEAA, 1977:20), probably reflects a class-serious offending association for UCR index crimes. Our previous discussion suggests that, in principle, properly constructed self-report instruments should be capable of confirming this association if it is actually present. However, the research problem is more complex than this solution suggests.

Let us assume that the most serious offenders, say those involved in UCR index offenses, are in fact disproportionately poor and uneducated as the prison population data suggest. Would a properly constituted self-report instrument (or even an

examination of police records for the general population) be expected to substantiate this class difference in illegal behavior? If the research design were similar to that typically employed in self-report surveys, there is good reason to believe that the results would be problematic. In the Wolfgang, Figlio, and Sellin (1972: Table G1.1) cohort data, the prevalence (from age 7 through age 17) of contact with the police for at least one index offense was 8.62% for white males and 20.43% for nonwhite males. Weighted to the racial distribution for the United States, the prevalence of contact with the police (through age 17) for an index offense is about 10% for (urban) males. If we assume that one out of two index offenders does not have any police contacts for index offenses during adolescence, the prevalence of at least one index offense would be about 20%.²¹ However, since this 20% figure is for all of adolescence and the typical self-report survey has a one-year reference period, an ideal self-report survey would have to be sensitive to class differences around an annual population prevalence rate of 2 or 3%. Thus, if the lower class index offense prevalence rate were double that of the middle class rate, the study would have to be sensitive to rate differences of two or three percentage points.

Given such skewness in the distribution of a dependent variable, what kind of self-report study is required to find appreciable class differences? First, the sample selected must generate enough self-reported delinquency for reliable measurement of serious crime. This can be done in one of two ways: either the sample size must be extremely large or the sample must be stratified by variables known to be correlated with serious delinquent behavior. If the extremely large sample route is taken, perhaps the best analogue to sample size requirements is the sample

²⁰ The Piliavin and Briar (1964) study is often cited as showing racial biases operating through demeanor. However, what is almost always ignored is the fact that in this study of sixty-six youth, neither the seriousness of the offense nor the prior record of the juvenile was controlled because N's were too small for reliable estimates. Piliavin and Briar (1964:209-12) state, however, that for serious personal crimes and for offenders with prior records, demeanor was much less significant.

²¹ It is important to note that 37% of those coming into contact with the police for index offenses were not arrested (Wolfgang et al., 1972: Table 13.1). Hence more than one-third of the index contacts recorded by the police were judged (by their release of the juvenile) to be insufficiently serious to warrant arrest.

size required to measure reliably criminal victimizations suffered by Americans. (As noted above, the Census Bureau conducts interviews with more than 130,000 persons twice per year.) The largest nationwide self-reported delinquency study published to date is Gold's National Survey of Youth, which conducted interviews with 1,395 11 to 18 year old males and females, 182 of whom were black. In estimating the distribution of delinquency by social class for 13 to 16 year old males, Gold had 115 or fewer males in each of his three social class cells. If delinquency of the UCR index-type is of interest, these numbers are inadequate for reliably distinguishing class effects. Even in studies that include examination of police records for general population samples, the proportion of *police*-recorded offenses of UCR index seriousness is so small that the task of finding reliable class differences would require much larger sample sizes than those typically used.

An alternative to such extremely large samples is to sample probabilistically within strata known to differ sharply on self-reported delinquency—for example, subjects with and without court records of serious delinquency. To the extent that the stratification variable is related to serious self-reported delinquency, the absolute sample size required to measure the dependent variable reliably will be reduced. By knowing the proportion of respondents falling into each stratum, in the population as a whole, the data can be weighted to produce unbiased estimates of population parameters.²²

Second, regardless of sampling method, if the population estimate of the class-crime association is summarized by a measure of association that is affected by the marginal distribution of the dependent variable, the tremendous skew of index-level offending in the general population would reduce to near zero even very large differences across classes in *rates* of of-

fending. Third, when we add the problem of nonresponse, it seems unlikely that serious offenders will be as cooperative as nonoffenders. For example, there is strong evidence that those known to have police records are less likely to participate in such surveys than those without police records (e.g., Hirschi, 1969: Table 5).

Thus, for all of these reasons, the substantive limits of conclusions regarding the consistency of self-report and official delinquency measures with respect to class are clear. At present, data on the most serious portion of the distribution of delinquent *behavior* are insufficient to allow class comparisons and hence confident substantive conclusions. However, if we move to the point of incarceration where social class data on serious offenders are available, we find the substantial class differences assumed by traditional sociological theories. At the other (non-serious) extreme, there do not appear to be class differences in adolescent behavior for the relatively minor offenses that make up the great bulk of what is collected in self-report studies and recorded in local police files.²³

The "trivial content" objection to the self-report method has had little impact on the revision of self-report instruments or sampling procedures. Although self-report instruments have gradually come to include somewhat more serious items, they are still dominated by less serious items. As shown above, even within the restricted seriousness range available in extant self-report studies, there is plentiful evidence that seriousness and item content affect self-report results. With respect to sex, these dimensions appear to account for much of the apparent discrepancy between official and self-report findings. Similarly, with respect to race, both self-report and victimization data suggest an overinvolvement of blacks in more serious offenses; some self-report (e.g., Berger and Simon, 1974) and virtually all official data suggest strong race

²² Parenthetically, it is important to note that this design will improve sampling efficiency and will be appropriate even if there are biases involved in labelling persons as court delinquents. As long as court records are related to delinquent behavior, stratifying on court records will improve sampling efficiency.

²³ Even at the court level, most researchers are surprised at the triviality of the offenses described in official accounts of juvenile misconduct. Such descriptions are consistent with Gordon's prevalence estimates reported above (see also note 21).

effects for violent offenses. Thus, explicit attention to seriousness and content differences across methods must precede comparisons of their results. In the absence of sharply increased sample sizes or more efficient designs, however, the inclusion of more serious items in self-report instruments will not solve the problem of reliably measuring index offenses with the self-report technique.²⁴

In historical perspective, it can be seen that students of crime have focused their attention on at least three measures of youthful misconduct: the Uniform Crime Reports index offenses, local police and court data, and self-report offenses. Because these data are all taken to be measures of delinquent behavior, it is easy to assume that they should produce similar findings without further adjustment for obvious differences among them. Close examination reveals that this assumption is unfounded. These measures are rarely available on the same subjects and the overlap in their content is often minimal. Wholesale comparisons of results using these three measures are therefore inappropriate and, in themselves, say little or nothing about the extent of criminal justice system biases or the adequacy of the self-report method.

REFERENCES

- Akers, Ronald
1964 "Socio-economic status and delinquent behavior: a retest." *Journal of Research in Crime and Delinquency* 1:38-46.
- Berger, Alan S. and William Simon
1974 "Black families and the Moynihan report: a research evaluation." *Social Problems* 22:146-61.
- Bonger, Wilhelm
1916 *Criminality and Economic Conditions*. Trans. H. P. Horton, Boston: Little, Brown.
- Chambliss, William J. and Richard H. Nagasawa
1969 "On the validity of official statistics: a comparative study of white, black, and Japanese high-school boys." *Journal of Research in Crime and Delinquency* 6:71-7.
- Clark, John P. and Larry L. Tift
1966 "Polygraph and interview validation of self-reported delinquent behavior." *American Sociological Review* 31:516-23.
- Cohen, Lawrence
1975 "Juvenile dispositions: social and legal factors related to the processing of Denver delinquency cases." Analytic Report SD-AR-4. U. S. Department of Justice, Law Enforcement Assistance Administration, National Criminal Justice Information and Statistics Service.
- De Fleur, Lois B.
1967 "On polygraph and interview validation." *American Sociological Review* 31:114-5.
- Dentler, Robert A. and Lawrence J. Monroe
1961 "Social correlates of early adolescent theft." *American Sociological Review* 26:733-43.
- Eaton, Joseph W. and Kenneth Polk
1961 *Measuring Delinquency*. Pittsburgh: University of Pittsburgh Press.
- Elliott, Delbert S. and Suzanne Ageton
1979 "Reconciling race and class differences in self-reported and official estimates of delinquency." Behavioral Research Institute. Mimeo.
- Elliott, Delbert S. and Harwin L. Voss
1974 *Delinquency and Dropout*. Lexington, Ma.: Heath.
- Elmhorn, Kerstin
1965 "Study in self-reported delinquency among school children in Stockholm." Pp. 117-46 in K. O. Christiansen (ed.), *Scandinavian Studies in Criminology*, Vol. 1. London: Tavistock.
- Epps, E. G.
1967 "Socio-economic status, race, level of aspiration, and juvenile delinquency: a limited empirical test of Merton's conception of deviation." *Phylon* 28:16-27.
- Erickson, Maynard L.
1972 "The changing relation between official and self-reported measures of delinquency: an exploratory descriptive study." *Journal of Criminal Law, Criminology and Police Science* 63:388-95.
- Erickson, Maynard L. and LeMar T. Empey
1963 "Court records, undetected delinquency, and decision-making." *Journal of Criminal Law, Criminology and Police Science* 54:456-69.
- Farrington, David P.
1973 "Self-reports of deviant behavior: predictive and stable?" *Journal of Criminal Law and Criminology* 64:99-110.
- Gold, Martin
1966 "Undetected delinquent behavior." *Journal of Research in Crime and Delinquency* 3:27-46.
1970 *Delinquent Behavior in an American City*. Belmont, Calif.: Brooks/Cole.
- Gold, Martin and David J. Reimer
1975 "Changing patterns of delinquent behavior among Americans 13 through 16 years old: 1967-1972." *Crime and Delinquency Literature* 7:483-517.

²⁴ Recently, Elliott and Ageton (1979) have subjected some of these hypotheses to empirical test with their National Youth Survey data. Unfortunately their instrument and research design (e.g., failure to draw a sufficiently large sample and failure to stratify disproportionately enough on key variables) do not allow definitive resolution of most of the issues raised in our paper.

- Gordon, Robert A.
1976 "Prevalence: the rare datum in delinquency measurement and its implications for the theory of delinquency." Pp. 201-84 in Malcolm W. Klein (ed.), *The Juvenile Justice System*. Beverly Hills: Sage.
- Gottfredson, Michael and Michael Hindelang
1979 "A study of the behavior of law." *American Sociological Review* 43:3-18.
- Gould, Leroy C.
1969 "Who defines delinquency: a comparison of self-reported and officially reported indices of delinquency for three racial groups." *Social Problems* 16:325-36.
- Hardt, Robert and Sandra Peterson-Hardt
1977 "On determining the quality of the delinquency self-report method." *Journal of Research in Crime and Delinquency* 14:247-61.
- Hindelang, Michael J.
1971 "Age, sex, and the versatility of delinquent involvement." *Social Problems* 18:522-35.
1973 "Causes of delinquency: a partial replication and extension." *Social Problems* 20:471-87.
1976 *Criminal Victimization in Eight American Cities*. Cambridge: Ballinger.
1978 "Race and involvement in common law personal crimes." *American Sociological Review* 43:93-109.
1979 "Sex and involvement in criminal activity." *Social Problems*. In press.
- Hindelang, Michael J. and Michael R. Gottfredson
1976 "The victim's decision not to invoke the criminal justice process." Pp. 57-78 in William McDonald (ed.), *Criminal Justice and the Victim*. Beverly Hills: Sage.
- Hindelang, Michael J., Michael R. Gottfredson and James Garafalo
1978 *Victims of Personal Crime: An Empirical Foundation for a Theory of Personal Victimization*. Cambridge: Ballinger.
- Hirschi, Travis
1969 *Causes of Delinquency*. Berkeley: University of California Press.
- Hirschi, Travis, Michael J. Hindelang, and Joseph G. Weis
Forth- The Measurement of Delinquency by the com- Self-Report Method. Cambridge, Ma.: ing- Oelgeschlager, Gunn, and Hain.
- Hohenstein, William F.
1969 "Factors influencing the police disposition of juvenile offenders." Pp. 138-49 in Thorsten Sellin and Marvin E. Wolfgang (eds.), *Delinquency: Selected Studies*. New York: Wiley.
- Kelley, Clarence
1977 *Crime in the United States—Uniform Crime Reports—1976*. Washington, D.C.: U.S. Government Printing Office.
- Kratcoski, Peter C. and John E. Kratcoski
1975 "Changing patterns in the delinquent activities of boys and girls: a self-reported delinquency analysis." *Adolescence* 10:83-91.
- Kulik, James A., K. B. Stein and T. R. Sarbin
1968 "Disclosure of delinquent behavior under conditions of anonymity and non-anonymity." *Journal of Consulting and Clinical Psychology* 32:506-9.
- Law Enforcement Assistance Administration
1977 *Survey of Inmates and Local Jails, 1972*. Washington, D.C.: Pre-Publication Report.
- Lively, E. L., Simon Dinitz and Walter Reckless
1962 "Self concepts as a predictor of juvenile delinquency." *American Journal of Orthopsychiatry* 32:159-68.
- Nye, F. Ivan
1958 *Family Relationships and Delinquent Behavior*. New York: Wiley.
- Nye, F. Ivan, James F. Short and Virgil Olson
1958 "Socio-economic status and delinquent behavior." *American Journal of Sociology* 63:381-9.
- Piliavin, Irving and Scott Briar
1964 "Police encounters with juveniles." *American Journal of Sociology* 70:206-14.
- Porterfield, Austin
1946 *Youth in Trouble*. Fort Worth: Leo Potishman Foundation.
- Reiss, Albert J.
1975 "Inappropriate theories and inadequate methods as policy plagues: self-reported delinquency and the law." Pp. 211-22 in N. J. Demerath, III, Otto Larsen, and Karl F. Schuessler (eds.), *Social Policy and Sociology*. New York: Academic Press.
- Reiss, Albert J. and Albert L. Rhodes
1961 "The distribution of juvenile delinquency in the social class structure." *American Sociological Review* 26:720-32.
- Rossi, Peter, Emily Waite, Christine E. Bose, and Richard E. Berk
1974 "The seriousness of crimes: normative structure and individual differences." *American Sociological Review* 39:224-37.
- Sellin, Thorsten and Marvin Wolfgang
1964 *The Measurement of Delinquency*. New York: Wiley.
- Shaw, Clifford R. and Henry D. McKay
1942 *Juvenile Delinquency and Urban Areas*. Chicago: University of Chicago Press.
- Short, James F., Jr. and F. Ivan Nye
1957 "Reported behavior as a criterion of deviant behavior." *Social Problems* 5:207-13.
- Slocum, Walter L. and Carol L. Stone
1963 "Family culture patterns and delinquent-type behavior." *Marriage and Family Living* 25:202-03.
- Somers, Robert
1962 "A new asymmetric measure of association for ordinal variables." *American Sociological Review* 27:799-811.
- Terry, Robert
1967 "The screening of juvenile offenders." *Journal of Criminal Law, Criminology, and Police Science* 58:173-81.
- Tittle, Charles R.
1976 "Labelling and crime: an empirical evaluation." Pp. 157-80 in Walter Gove (ed.), *The Labelling of Deviance: Evaluation of a Perspective*. New York: Halsted.
- Tittle, Charles R., Wayne J. Villemez, and Douglas A. Smith
1978 "The myth of social class and criminality:

- an empirical assessment of the empirical evidence." *American Sociological Review* 43:643-56.
- Walberg, Herbert J., Elaine Gee Yeh, and Stephanie Mooney Paton
1974 "Family background, ethnicity, and urban delinquency." *Journal of Research in Crime and Delinquency* 11:30-7.
- Wallerstein, James S. and Clement J. Wyle
1947 "Our law-abiding law-breakers." *Probation* 25:107-12.
- Wechsler, Henry and Denise Thum
1973 "Teen-age drinking, drug use, and social correlates." *Quarterly Journal of Studies on Alcohol* 34:1220-7.
- Williams, Jay R. and Martin Gold
1972 "From delinquent behavior to official delinquency." *Social Problems* 20:209-29.
- Wolfgang, Marvin, Robert Figlio, and Thorsten Sellin
1972 *Delinquency in a Birth Cohort*. Chicago: University of Chicago Press.

RESEARCH NOTE

EFFECTS OF SOCIOECONOMIC FACTORS ON THE RESIDENTIAL SEGREGATION OF BLACKS AND SPANISH AMERICANS IN U.S. URBANIZED AREAS*

DOUGLAS S. MASSEY

Princeton University

American Sociological Review 1979, Vol. 44 (December):1015-1022

INTRODUCTION

According to theorists of human ecology, differences in the degree of residential segregation between groups is a result of differences in socioeconomic variables such as income, education, and occupation (Burgess, 1923; Park, 1926). With respect to racial segregation, this hypothesis has been effectively discredited by a number of studies (Taeuber and Taeuber, 1964; 1965; Taeuber, 1968; Farley, 1977; 1979). At the same time, the hypothesis has received some support from studies of ethnic segregation. Several researchers have reported significant correlations between ethnic segregation and various indicators of socioeconomic status (Duncan and Lieberman, 1959; Lieberman, 1961; 1963; Darroch and Marston, 1971; Guest and Weed, 1976). However, there is some inconsistency in the evidence. While Korbin and Goldscheider (1978) report that ethnic concentration generally decreases with social class, Darroch and Marston (1971) and Kantrowitz (1973) found no such relationship.

The Spanish-American population represents an interesting group on which to further examine the social class basis of segregation. Like the black population, it represents a large, highly visible urban

minority with a history of discrimination and socioeconomic exploitation. Similar patterns of residential segregation might therefore be expected. This paper compares patterns of black and Hispanic segregation with respect to the effects of socioeconomic variables. Following the tenets of human ecology, and in light of previous findings regarding ethnic segregation, we hypothesize an inverse relationship between socioeconomic class and degree of Hispanic segregation from whites.

This is not the first study to examine effects of socioeconomic factors on Hispanic segregation. Using 1960 census data, Grebler et al. (1970) presented evidence to suggest an aggregate-level correlation between economic factors and Spanish-Anglo segregation across 35 southwestern cities. However, Kantrowitz (1973) found that among Puerto Ricans in the New York metropolitan area, segregation was unaffected by social class. Aside from these two apparently contradictory studies, there has been no systematic attempt to study the impact of socioeconomic variables on Hispanic segregation, and such a study has never been undertaken on a national sample of cities using 1970 census data.

DATA

This paper presents research undertaken as part of a larger study of Spanish-American segregation in the 29 largest urbanized areas in the United

* Address all communications to: Douglas S. Massey; Graduate Group in Demography; University of California at Berkeley; Berkeley, CA 94720.

I would like to thank Jane Menken, Bryan Boulier, Julian Wolpert, Gilbert Rozman, and Reynolds Farley for their helpful comments and advice in the preparation of this paper.

States. Urbanized areas were chosen for analysis instead of SMSAs because the concern here was with urban segregation. In 1970, about 22% of the population outside of urbanized areas, but within SMSAs was classified as rural (U.S. Bureau of the Census, 1972: Table 47).

All data have been taken from the Fourth Count Summary Tapes, File A, of the 1970 Census of Population, which present cross-tabulations of white, black, and Spanish-American populations by education, income, and occupation within census tracts of SMSAs (U.S. Bureau of the Census, 1970). Since tracts can at times straddle boundaries of urbanized areas, a tract was included in an urbanized area only if the majority of its population lived inside the boundary.¹

For its detailed cross-tabulations, the Census Bureau defines Spanish Americans differently in different regions of the country. In New York, New Jersey, and Pennsylvania, Spanish Americans are defined on the basis of Puerto Rican birth or parentage. In the Southwest (Arizona, California, Colorado, New Mexico, and Texas), the population consists of persons of Spanish language, plus persons of Spanish surname but not of Spanish language. In the remaining states, the Spanish-American population is defined simply as persons of Spanish language.

In general, differences between populations defined on the basis of Spanish language and Spanish language plus surname are relatively minor. Inclusion of persons of Spanish surname but not of Spanish language in the Spanish-American population of the Southwest has the effect of lowering slightly the level of measured segregation, compared to populations defined on the basis of Spanish language alone. Moreover, there are no apparent differences in patterns of segregation across socioeconomic status categories.

On the other hand, the Puerto Rican population of the Northeast is very different from other Spanish populations, primarily in that Puerto Ricans are iden-

tified explicitly on the basis of birth or parentage. Persons of third or greater generation are thus not included in this population. Perhaps as a result, Puerto Ricans are much more segregated than other Spanish groups, and exhibit very different patterns of segregation across social classes. Therefore, Puerto Ricans will generally be treated separately from other Spanish populations in this paper.

METHODS

The effect of social class on Hispanic segregation will be assessed in two ways. First, indices of dissimilarity will be computed within socioeconomic status categories defined on the basis of variables such as education, family income, and occupation. Such indices measure the degree of segregation between ethnic or racial groups of the same socioeconomic class. These within-class indices may vary from a minimum of zero (no segregation) to a maximum of 100 (total segregation), and represent the proportion of minority that would have to change tracts to achieve evenness *within* socioeconomic categories (Duncan and Duncan, 1955b; Taeuber and Taeuber, 1965). The strengths and weaknesses of the index of dissimilarity as a measure of segregation are well known (cf. Duncan and Duncan, 1955a; Cortese et al., 1976; Taeuber and Taeuber, 1976; Winship, 1977; Massey, 1978), and although there remains some debate on the pros and cons of the measure, it is employed here in the absence of any suitable alternative and any clear evidence of its inappropriateness. However, because the index can be inflated by random factors when small numbers are involved (as in some socioeconomic status categories), within-class indices will be interpreted as indicating relative levels of segregation across social classes. At the same time, care will be taken to avoid small within-class frequencies that could lead to possible biases.

The effect of socioeconomic factors on segregation will also be assessed by examining the relationship, across urbanized areas, between Hispanic segregation and various indicators of socioeconomic status. A negative relationship

¹ The laborious task of locating tracts within or outside of urbanized areas had already been done for the 29 urbanized areas by Farley (1977), who generously made the information available for this study.

SOCIOECONOMIC FACTORS AND RESIDENTIAL SEGREGATION 1017

between Spanish socioeconomic status and extent of residential segregation from whites is expected.

RESULTS

1. Segregation within Socioeconomic Classes

Because the size of Spanish-American populations is relatively small in many of the 29 urbanized areas under study, cross-classification by socioeconomic status produces within-class frequencies that are often very small, particularly among the upper strata. Therefore, analysis of patterns of within-class segregation is restricted to ten of the 29 urbanized areas with large Spanish populations.² New York is not included among these ten because its Spanish-American population consists entirely of first- and second-generation Puerto Ricans, and will be considered separately.

For each of the ten urbanized areas, indices of dissimilarity were calculated within social classes defined on the basis of education, family income, and occupation. The resulting segregation scores were then averaged within classes and plotted in Figures 1, 2, and 3 to depict patterns of Spanish-white, Spanish-black, and black-white segregation across socioeconomic classes.³ In Figure 3, occupational groups are ordered on the x-axis from low to high socioeconomic status using Duncan's (1961) SEI scores.

These figures clearly support the hypothesis of a negative relationship between socioeconomic status and degree of Spanish-white segregation. Whether measured in terms of education, income, or occupation, Spanish-white segregation declines unambiguously with increasing socioeconomic class.

² The ten urbanized areas are Chicago, Dallas, Denver, Houston, Los Angeles, Miami, San Diego, San Francisco, San Jose, and Washington, D.C.

³ For all segregation scores computed in this paper, white and black populations were defined net of Spanish Americans. To do this, black Spanish and white Spanish were identified by socioeconomic category within each census tract and subtracted from the corresponding total black and white populations reported for that tract on the Fourth Count Tapes.

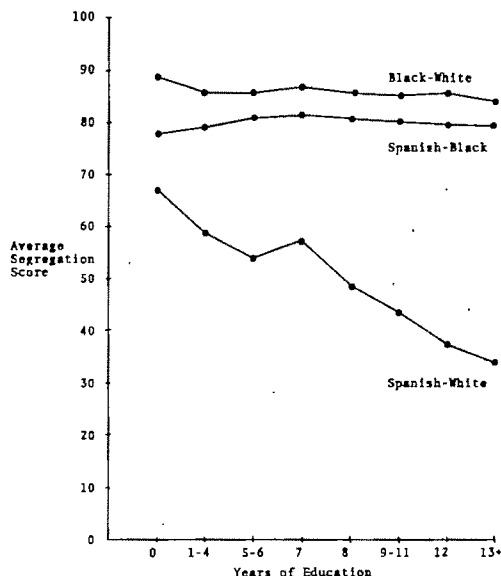


Figure 1. Average Segregation by Level of Education, 10 Urbanized Areas

As one would expect from the literature on racial segregation, Spanish-black and black-white segregation both remain very high across all socioeconomic classes. While Spanish-white segregation declines 33 points from the lowest to highest edu-

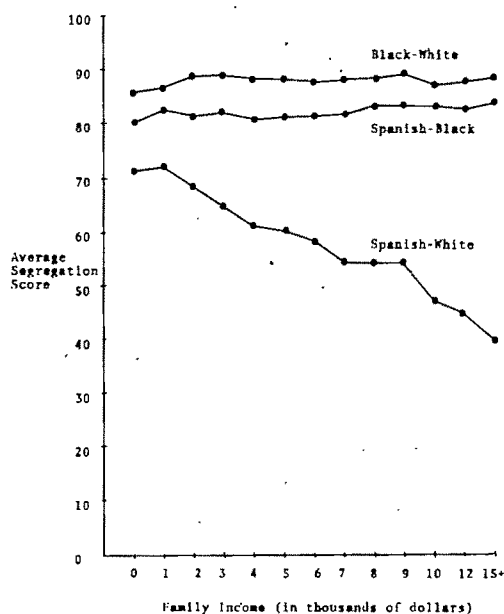


Figure 2. Average Segregation by Level of Family Income, 10 Urbanized Areas

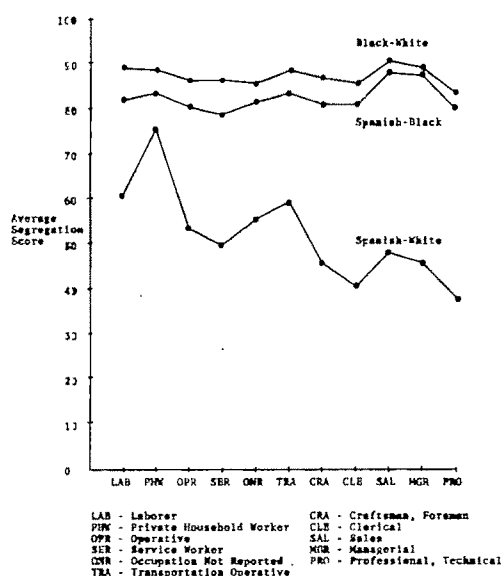


Figure 3. Average Segregation by Occupational Group, 10 Urbanized Areas

cational category, there is no apparent change in the degree of either black-white or Spanish-black segregation. Note, however, that the level of Spanish-black segregation is generally somewhat less than that of black-white segregation. Similar results are observed when social classes are defined on the basis of income.

The decline in Spanish-white segregation is also apparent across occupational groups, even though it is much more erratic. This uneven pattern is not surprising given the rather broad, heterogeneous occupational groupings employed by the Census Bureau. However, the correlation between occupational status and average Spanish-white segregation is -0.78 , and there is a decline of 23 points between the lowest and highest occupational status groups. Considering the crudeness of the occupational groupings, the data reveal a fairly clear tendency for Spanish-white segregation to decrease as one moves from blue-collar to white-collar occupational categories. As with other measures of social status, there is no apparent decline in either Spanish-black or black-white segregation across occupational groups.

The above results provide strong evidence of a potent socioeconomic effect

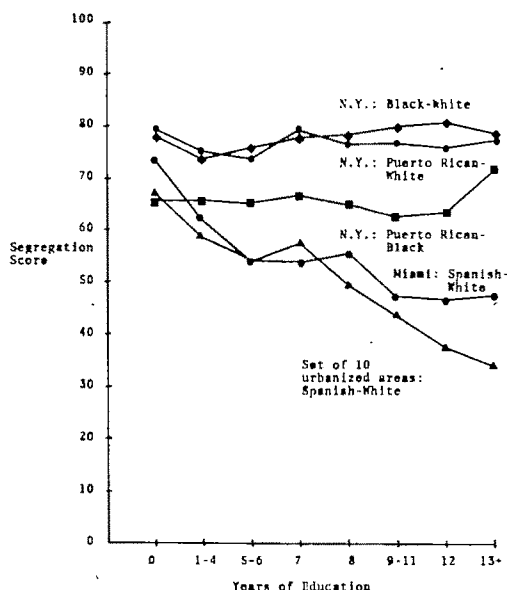


Figure 4. Segregation by Level of Education in the New York Urbanized Area, Compared to Segregation in Miami and a Set of 10 Urbanized Areas

operating on Spanish-white segregation among the ten cities under consideration. However, when the effect of social class is examined for persons of Puerto Rican birth or parentage in New York, a very different picture emerges, as can be seen from Figure 4, which presents patterns of segregation by education in New York.

Note first of all that, unlike Spanish populations in other urbanized areas, there is no evidence of any decline in Puerto Rican-white segregation with increasing social class. Second, the overall level of Puerto Rican-white segregation is considerably higher than that of Puerto Rican-black segregation. These patterns are similarly repeated when income and occupation are used as indicators of social class.

The reason for this discrepancy with previous results is not at all clear. In particular, we cannot say whether these findings reflect the uniqueness of New York as a metropolitan area, or Puerto Ricans as a Hispanic population. While explaining this mystery is beyond the scope of this paper, we can eliminate one seemingly plausible hypothesis.

One might theorize that the absence of a

discernible socioeconomic effect among Puerto Ricans could relate to the fact that, unlike other Hispanic groups considered here, Puerto Ricans are defined on the basis of their "foreign" birth or parentage, thus excluding all higher generation individuals. If one assumes that socioeconomic status increases with generations spent in the United States, and that segregation declines within increasing generation, then the lack of a decline in segregation among Puerto Ricans could be due to the systematic absence of less-segregated native stock Spanish within the higher socioeconomic classes.

This hypothesis was tested by comparing patterns of within-class segregation in New York and Miami. Miami's Spanish population is itself 86% foreign stock, primarily of Cuban birth or parentage. If it is the absence of native stock Spanish that accounts for the lack of a socioeconomic effect among New York Puerto Ricans, then we would expect Miami to show little or no decline in Spanish-white segregation with increasing social status.

As can be seen in Figure 4, this is not the case. Although the decline is not as regular as the ten-city average, Miami, nonetheless, displays a clear decrease in the level of Spanish-white segregation across educational categories, a finding repeated using income and occupational data.

Thus anomalous results found with respect to New York Puerto Ricans cannot easily be explained as artifacts of their definition in terms of Hispanic birth or parentage rather than Spanish language.

2. Socioeconomic Factors and Interurban Variation in Segregation

We have thus demonstrated a clear pattern of decline in the level of Spanish-white segregation with increasing socioeconomic status. It seems logical, therefore, to hypothesize that the higher the overall social status of a city's Spanish population, the lower should be the level of Spanish-white segregation. In other words, there should be an inverse relationship between the overall socioeconomic status of an urbanized area's Spanish population and the degree of its segregation from whites. At the same time, we expect no relationship between overall social status and the level of either Spanish-black or black-white segregation.

Table 1 presents least-squares estimates of relationships between segregation and indicators of socioeconomic status across the 29 urbanized areas. Again, the hypothesis of an inverse relationship between Spanish-white segregation and socioeconomic status is amply confirmed. Interurban variation in socioeconomic indicators such as median education, me-

Table 1. Relationships between Socioeconomic Variables and Segregation across 29 Urbanized Areas

Spanish-white	Median Years Education	Median Family Income	% in High Status Occupations
r^2	0.80	0.65	.72
b	-7.12*	-0.006*	-0.96*
SE	0.70	0.001	0.12
a	120.48	107.89	97.25
Spanish-Black			
r^2	0.04	0.00	0.03
b	-1.10	-0.0003	-0.13
SE	1.12	0.0012	0.16
a	86.59	78.21	82.25
Black-white			
r^2	0.05	0.05	0.18
b	-2.11	-0.001	-0.45*
SE	1.70	0.001	0.18
a	104.62	93.32	99.83

* $p < .05$.

Note: For relationships involving Spanish-white and Spanish-black segregation, measures of socioeconomic status pertain to the Spanish population, while for those relationships involving black-white segregation, the measures pertain to the black population.

dian income, and percentage in high status occupations⁴ accounts for between 65 and 80% of the variation in Spanish-white segregation scores. At the same time, there is little evidence of any relationship between socioeconomic variables and either Spanish-black or black-white segregation. The only coefficient to achieve significance was that relating black occupational status to the level of black-white segregation. However, occupational status obviously explains much less of black-white than Spanish-white segregation. In short, interurban relationships between socioeconomic status and segregation reinforce and strengthen previous results pertaining to patterns of segregation within social classes.

SUMMARY AND DISCUSSION

The above results reveal a marked dissimilarity between patterns of black and Hispanic segregation. As other scholars have previously noted, the high degree of segregation between blacks and whites cannot be accounted for by socioeconomic factors alone. In contrast, patterns of Spanish-white segregation are very highly related to social class. Results indicate that as socioeconomic status increases, within-class segregation between Spanish Americans and whites falls off steeply. Moreover, variation in the degree of Spanish-white segregation between cities is highly related to variation in the general socioeconomic level of cities' Spanish populations. A notable exception to the pattern of strong social class effects was the Puerto Rican population of New York, which exhibited remarkably high levels of segregation from whites across all social classes.

Interestingly, Spanish Americans were found to be quite highly segregated from blacks at all socioeconomic levels. While the overall degree of Spanish-black segregation was somewhat less than the very

high level of black-white segregation, their patterns across social class strata were almost parallel, suggesting that Spanish Americans resemble other whites very closely with regard to their residential behavior towards blacks.

In general, these findings confirm the ecological hypothesis that spatial relations between groups can be understood in terms of social and economic variables, and support theorists such as Burgess (1923) and Park (1926), and the later findings of the Duncans (1955b), the Taeubers (1964), and Lieberman (1963). Some scholars have recently criticized the ecological perspective for placing too much emphasis on the reduction of ethnic segregation through socioeconomic processes, pointing instead to the remarkable persistence of ethnic segregation in American cities (Darroch and Marston, 1971; Kantrowitz, 1973). Our findings are also consistent with this point of view, for in spite of the very obvious socioeconomic effects, Hispanic segregation is never eliminated by controlling for social class. Even among the highest strata, Spanish-white segregation persists at some level. We thus concur with Guest and Weed (1976), who similarly found merit in the views of ecological theorists as well as their critics.

The findings of this paper also suggest a subtle departure from usual derivations from ecological theory. Theorists usually have hypothesized ethnic segregation to be a function of social status differences between groups (cf. Darroch and Marston, 1971; Guest and Weed, 1976). Our results suggest that differences may not be the important variable in operation. If social class differences were crucial determinants of segregation, then, when we control for such differences, the results should yield reduced levels of segregation within all status categories. In fact, within-class segregation scores are reduced only as one approaches the upper socioeconomic strata. In spite of their equal socioeconomic statuses, Spanish Americans and whites within the lowest strata are quite highly segregated. Given this fact, one might conclude that it is absolute, and not relative, socioeconomic status that is important in determining levels of ethnic segregation. As larger

⁴ To obtain the percentage in high status occupations, the 11 occupational categories were ordered in terms of Duncan's (1961) SEI scores and divided at the median to form two groups: high status and low status occupations. The high status group had a mean status rating of 51.4, compared to a value of 12.8 for the low status group.

shares of an ethnic population enter (over time) the higher status categories, ethnic segregation should be correspondingly reduced—irrespective of status relative to other groups.

This conclusion is consistent with processes of ethnic assimilation suggested by the recent work of Korbin and Goldscheider (1978). According to their findings, higher status categories are less segregated because of their higher residential mobility. Individuals in the upper socioeconomic strata are progressively more likely to move out of areas of ethnic concentration than those in lower strata, with the ultimate result being a decline in segregation with increasing status. Since spatial concentration and residential stability are crucial to the maintenance of patterns of ethnic socialization and interaction, ethnic identification is progressively weakened among the upper socioeconomic strata, and assimilation occurs. If such is the process underlying residential desegregation, then *relative* socioeconomic status is not the key variable, although it may play some role. Rather it is the *absolute* advance of ethnic groups up the socioeconomic scale that affects underlying processes of residential mobility, which in turn give rise to reduced levels of residential segregation.

Such a process is consistent with the results presented here. Moreover, it explains the remarkable persistence of ethnic segregation noted by Kantrowitz (1973) and others. Even if an ethnic population such as Spanish Americans were to achieve a socioeconomic distribution equal to that of native white Americans, segregation would not be eliminated, since a large share of the Spanish population would remain in the less mobile, more segregated lower strata.

In conclusion, the implications of the above results with respect to future trends in residential segregation and assimilation of Spanish Americans are clear. Socioeconomic advancement should lead to significantly reduced levels of residential segregation among Spanish Americans, and ultimately to greater assimilation. According to the relationships depicted in Table 1, if Spanish Americans among the 29 urbanized areas were to achieve a me-

dian education level of 12 years, expected Spanish-white segregation would fall to around 35, compared to its current value of 44. Thus, over time, the potential for residential desegregation and assimilation among Spanish populations is considerable, particularly in comparison with blacks, who are highly segregated from other ethnic and racial groups of all social classes.

REFERENCES

- Burgess, E.
1923 "The growth of the city: an introduction to a research project." *Proceedings of the American Sociological Society* 18:57-85.
- Cortese, C. F., R. F. Falk, and J. K. Cohen
1976 "Further considerations on the methodological analysis of segregation indices." *American Sociological Review* 41:630-7.
- Darroch, A. G., and W. G. Marston
1971 "The social class basis of ethnic residential segregation: the Canadian case." *American Journal of Sociology* 77:491-510.
- Duncan, O. D.
1961 "A socioeconomic index for all occupations." Pp. 109-38 in Albert J. Reiss, Jr. (ed.), *Occupations and Social Status*. New York: Free Press.
- Duncan, O. D., and B. Duncan
1955a "A methodological analysis of segregation indexes." *American Sociological Review* 20:210-7.
1955b "Residential distribution and occupational stratification." *American Journal of Sociology* 60:493-503.
- Duncan, O. D., and S. Lieberman.
1959 "Ethnic segregation and assimilation." *American Journal of Sociology* 64:364-74.
- Farley, R.
1977 "Residential segregation in urbanized areas of the United States in 1970: an analysis of social class and racial differences." *Demography* 14:497-518.
1979 "Can blacks afford to live in white residential areas? A test of the hypothesis that subjective economic variables account for racial residential segregation." Paper presented at the 1979 meeting of the Population Association of America, Philadelphia.
- Grebler, L., J. W. Moore, and R. C. Guzman
1970 *The Mexican American People: The Nation's Second Largest Minority*. New York: Free Press.
- Guest, A. M., and J. A. Weed
1976 "Ethnic residential segregation: patterns of change." *American Journal of Sociology* 81:1088-111.
- Kantrowitz, N.
1973 *Ethnic and Racial Segregation in the New York Metropolis*. New York: Praeger.

- Korbin, F. E., and C. Goldscheider
 1978 *The Ethnic Factor in Family Structure and Mobility*. Cambridge, Mass.: Ballinger.
- Liebertson, S.
 1961 "The impact of residential segregation on ethnic assimilation." *Social Forces* 40:52-7.
 1963 *Ethnic Patterns in American Cities*. New York: Free Press.
- Massey, D. S.
 1978 "On the measurement of segregation as a random variable." *American Sociological Review* 43:587-90.
- Park, R. E.
 1926 "The urban community as a spatial pattern and a moral order." Pp. 3-28 in E. W. Burgess (ed.), *The Urban Community*. Chicago: University of Chicago Press.
- Taeuber, K. E.
 1968 "The effect of income redistribution on racial residential desegregation." *Urban Affairs Quarterly* 4:5-15.
- Taeuber, K. E., and A. F. Taeuber
 1964 "The Negro as an immigrant group: recent trends in racial and ethnic segregation in Chicago." *American Journal of Sociology* 69:347-82.
 1965 *Negroes in Cities*. Chicago: Aldine.
 1976 "A practitioner's perspective on the index of dissimilarity." *American Sociological Review* 42:884-9.
- U.S. Bureau of the Census
 1970 *1970 Census Users' Guide, Part I*. Washington, D.C.: U.S. Government Printing Office.
 1972 *Census of Population: 1970, PC(1)-B1*. Washington, D.C.: U.S. Government Printing Office.
- Winship, C.
 1977 "A revaluation of indexes of segregation." *Social Forces* 55:1058-66.

ITEMS (Continued)

search concerns work on basic sociological concepts and their measurement.

■ **ROBERT J. ANTONIO** (The Contradiction of Domination and Production in Bureaucracy) is Associate Professor in the Department of Sociology at the University of Kansas. He is doing research on the long-term roots of modern state bureaucratic society. His work focuses on the role of the historical development of reason/rationalization in the larger system's social, economic, political, and ideological development.

■ **DAVID JACOBS** is Assistant Professor in the Department of Sociology at the University of Maryland Baltimore County. His most recent publication (with David Britt in the August, 1979, *Social Problems*) involved a test of conflict theory using the number of killings by policemen. He is currently working on a theoretical treatment of mobility systems within organizations and an empirical reconciliation of political and dual labor market explanations for economic stratification.

■ **DOUGLAS LEE ECKBERG** (The Paradigm Concept and Sociology) is Assistant Professor in the Department of Sociology at the University of Tulsa. In October, 1979, his book, *Intelligence and Race: The Origins and Dimensions of the IQ Controversy*, was published (Praeger). In press (*Annual Review of Sociology*) (and co-authored with Joe R. Feagin) is "Discrimination: Motivation, Action, Effects, and Content." He is doing research on the development of beliefs (within the realm of science) concerning women's intelligence. **LESTER HILL, JR.** is Associate Professor at Jacksonville (Alabama) State University. Currently, he is researching the relationship between belief systems and behavior, and factors affecting changes in belief systems.

■ **JOHN M. STAHURA** (Suburban Status Evolution/Persistence) is Assistant Professor in the Department of Sociology and Anthropology at Purdue University. His current areas of interest are suburban crime-rate models and projections, and the modelling of growth and decline of central cities.

■ **ROBERTA G. SIMMONS** (Entry into Early Adolescence) is Professor in the Department of Sociology at the University of Minnesota. Two longitudinal researches presently occupy her. One, a study of Milwaukee school children, looks at the determinants of self-esteem in different school environments in early and late adolescence. The second, a study of kidney-transplant recipients (and of the family members who did and did not donate kidneys to them), examines family stress, family decision-making, and changing self-esteem in these circumstances. She has recently had two books published. In 1977, *Gift of Life: The Social and Psychological Impact of Organ Transplantation* (written with Susan D. Klein and Richard L. Simmons) (Wiley Interscience). In 1979, she was the Editor of *Research in Community and Mental Health, Volume 1* (JAI Press). **DALE A. BLYTH** is a Fellow at the Boys Town, Nebraska, Center for the Study of Youth Development. He is directing a School and Adolescent Development Research Program, exam-

ining social and psychological consequences of different school structures upon early adolescents, and is exploring the interactions of school contexts and physical development as related to self-image and social development variables. **DIANE MITSCH BUSH** is Assistant Professor in the Department of Sociology at the University of Arizona. A chapter, "Socialization Processes through the Life Course" (written with Roberta G. Simmons), for *Sociological Perspectives in Social Psychology* (Basic Books) is forthcoming. Her research currently is on repression of the labor movement in the southwest during the World War I era. **EDWARD F. VAN CLEAVE** is a Ph.D. candidate in the Department of Sociology at the University of Minnesota, where his research is currently involved with a two-sample investigation of the impact of family structure upon early adolescent self-esteem. His work also involves construction of a formal theory for the development of interpersonal commitment.

■ **KENNETH I. SPENNER** (Temporal Changes in Work Content) is a post-doctoral Fellow at the Center for the Study of Youth Development at Boys Town, Nebraska. His research interests include occupational characteristics and classification systems. He is collaborating with Luther Otto and Vaughn Call in a longitudinal study of career entry.

■ **HARVEY MARSHALL** is Associate Professor in the Department of Sociology at Purdue University. In his current research he is analyzing black and white suburbanization, by socioeconomic status; as well as return migration to central cities by socioeconomic status.

■ **MICHAEL J. HINDELANG** is Professor in the School of Criminal Justice, SUNY, at Albany. His research includes projects on the methodology of self-reported delinquency, the use of victimization data to study serious youthful offending, and the utilization of criminal justice statistics. In 1978, his *Victims of Personal Crime: An Empirical Formulation for a Theory of Personal Victimization* (written with Michael J. Gottfredson and James Garofalo) was published (Ballinger). Forthcoming is his most recent book, *The Measurement of Delinquency by the Self-Report Method* (with Travis Hirschi and Joseph G. Weis). **TRAVIS HIRSCHI**, also Professor in the SUNY, Albany, School of Criminal Justice, is working on Method Effects in Self-Report Measurement, and collaborated on the aforementioned book. **JOSEPH G. WEIS** is Assistant Professor in the Department of Sociology, University of Washington, Seattle, where he is researching the measurement of delinquency; crime projections; and the role of peer influence on delinquent behavior. He also collaborated on the here-mentioned book (with Hindelang and Hirschi).

■ **DOUGLAS S. MASSEY** is a post-doctoral Fellow in the Graduate Group in Demography at the University of California, Berkeley. His investigations of patterns of migration between Mexico and the United States focuses on both legal and illegal migration. He is also analyzing patterns of neighborhood transition and spatial segregation among Hispanic populations in United States cities.

1979
EDITORIAL CONSULTANTS

Adams, Bert N.
Akers, Ronald L.
Alba, Richard D.
Albrecht, Gary
Albrecht, Stan
Aldous, Joan
Aldrich, Howard E.
Alexander, C. Norman, Jr.
Alexander, Karl
Allen, Michael Patrick
Allison, Paul
Althausen, Robert
Altheide, David
Alwin, Duane
Antonio, Robert
Armer, J. Michael
Armor, David
Bahr, Howard
Bailey, Kenneth D.
Baker, Paul
Baldwin, John
Barchas, Patricia
Bean, Frank D.
Beck, E. M.
Bell, Wendell
Bendix, Reinhard
Benson, Kenneth
Berger, Bennett M.
Berger, Joseph
Berk, Richard
Bernard, Jessie
Bernstein, Ilene
Bielby, William
Black, Donald
Blumstein, Alfred
Bonacich, Phillip P.
Bord, Richard
Bordua, David
Bose, Christine E.
Boulding, Elise
Breiger, Ronald L.
Bridges, William
Britt, David W.
Browning, Charles
Brymer, Richard
Buckley, Walter
Bumpass, Larry L.
Bunker, Stephen
Burawoy, Michael
Burnstein, Paul
Burt, Ronald S.
Cain, Pamela S.
Camilleri, Santo
Campbell, Richard T.
Carey, James W.
Champion, Dean J.
Chase, Ivan
Chase-Dunn, Christopher
Choldin, Harvey
Clark, John P.
Clemente, Frank
Clignet, Remi
Cohen, Albert
Cohen, Larry
Cohen, Roberta

Cole, Jonathan
Coleman, James S.
Collins, Randall
Connor, Walter D.
Coser, Lewis
Costner, Herbert L.
Couch, Carl J.
Crain, Robert
Crano, William
Curtis, Richard F.
Cutright, Phillips
Danigelis, Nicholas L.
Darrow, William
Davis, Fred
Davis, James A.
Davis, Kingsley
Davis, Murray
de Jong, Gordon F.
Delacroix, Jacques
Denisoff, R. Serge
Denzin, Norman
Dillingham, Gerald
DiMaggio, Paul
Direnzo, Gordon
Dizard, Jan
Dohrenwend, Barbara
Drabek, Thomas
Duncan, O. D.
Dutton, Diana
Eckland, Bruce K.
Edmonston, Barry
Ehrlich, Howard J.
Elder, Glen Holl, Jr.
Emerson, Richard
Empey, Lamar T.
Erickson, Eugene C.
Fararo, Thomas J.
Farberman, Harvey
Farley, Reynolds
Faulkner, Robert R.
Faunce, William
Feldman, Kenneth A.
Ferree, Myra Marx
Fields, James
Fienberg, Steven
Fine, Gary A.
Firebaugh, Glenn
Fischer, Claude
Fliegel, Frederick C.
Fligstein, Neil
Form, William
Fox, John D.
Franks, David
Freeman, Howard
Freeman, John
Frisbie, Parker
Frey, William H.
Gale, Richard
Gamson, William A.

Gans, Herbert
Gibbs, Jack P.
Gitlin, Todd
Goffman, Erving
Goode, William
Gordon, Gerald
Gove, Walter R.
Graña, Cesar
Granovetter, Mark
Greeley, Andrew M.
Gregory, Stanford
Griffin, Larry J.
Grimshaw, Allen
Gross, Edward
Guest, Avery
Gusfield, Joseph R.
Gutman, Robert
Haberman, Shelby
Hage, Jerald T.
Hagstrom, Warren O.
Hallinan, Maureen T.
Hamblin, Robert L.
Hannan, Michael T., Jr.
Hargens, Lowell L.
Haug, Marie
Hauser, Robert M.
Hazelrigg, Lawrence E.
Heise, David
Henshel, Richard
Hewitt, Christopher
Hewitt, John
Heyl, Barbara
Hill, Richard
Hinkle, Roscoe
Hirsch, Paul
Hollander, Paul
Horan, Patrick M.
House, James S.
Hout, Michael
Howe, Richard
Huber, Joan
Hudis, Paula
Hummon, Norman P.
Imrey, Peter B.
Irwin, John
Jackman, Robert W.
Jackson, Elton
Jacobs, Norman
Janowitz, Morris
Jencks, Christopher S.
Jenkins, Craig
Jensen, Gary F.
Johnson, Harry
Johnson, Michael P.
Johnstone, John
Kadushin, Charles
Kalleberg, Arne
Karsh, Bernard

Kelley, Jonathan
 Kemper, Theodore
 Kerckhoff, Alan C.
 Kimberly, John
 Klaff, Vivian
 Knoke, David
 Kohn, Melvin L.
 Kraus, Richard
 Kuhn, Alfred
 Land, Kenneth
 Landsman, Gail
 Leik, Robert K.
 Lever, Janet
 Levine, Donald
 Levine, Joel H.
 Lewis, J. David
 Liebersen, Stanley
 Light, Ivan H.
 Lincoln, James R.
 Lindesmith, Alfred
 Lipset, Seymour M.
 Lofland, Lynn
 Lueschen, Guenther
 Lundman, Richard
 McAuliffe, William
 McCartney, James L.
 McGinnis, Robert
 McHugh, Peter
 McKee, James
 McMillen, Marilyn
 Manning, Peter
 Mare, Robert D.
 Marini, Margaret
 Maris, Ronald
 Marsden, Peter
 Marsh, Robert
 Marwell, Gerald
 Marx, Gary
 Mason, Karen Oppenheim
 Mayhew, Bruce
 Mazur, Allan
 Mercer, Jane
 Meyer, John W.
 Meyer, Marshall W.
 Micklin, Michael
 Miller, Jerry
 Miller, Peter
 Mitroff, Ian
 Moch, Leslie
 Moch, Michael
 Molotch, Harvey L.
 Moore, Gwen
 Moore, Joan W.
 Moore, Kristin
 Moore, Wilbert
 Morrison, Denton
 Mullins, Nicholas C.
 Nagin, Daniel
 Nahemow, Nina

Newport, Frank
 Nisbet, Robert A.
 Ornstein, Michael
 Orum, Anthony
 O'Toole, Richard
 Pampel, Fred, Jr.
 Parish, William
 Payne, David
 Perrow, Charles B.
 Peterson, Richard
 Pfeffer, Jeffrey
 Phillips, David
 Pinard, Maurice
 Pitts, Jesse
 Poll, Solomon
 Pondy, Louis
 Pope, Whitney
 Porton, Gary
 Poston, Dudley L.
 Psathas, George
 Quadagno, Jill
 Quarantelli, Enrico L.
 Quinney, Richard
 Ragin, Charles
 Reed, John S.
 Reed, Theodore
 Ridgeway, Cecilia
 Riley, Matilda
 Rindfuss, Ronald
 Ritzer, George
 Roncek, Dennis
 Roof, W. Clark
 Rose, Ed
 Rose, Vicki
 Rosenbaum, James
 Rosenberg, Morris
 Rosenfeld, Rachel
 Rossi, Alice S.
 Rossi, Peter H.
 Roth, Guenther
 Roth, Julius A.
 Roy, Donald F.
 Rubin, Israel
 Rushing, William A.
 Ryder, Norman B.
 Scarr, Sandra
 Scheff, Thomas J.
 Schegloff, Emmanuel A.
 Schneider, Louis
 Schnore, Leo F.
 Schoen, Robert
 Schoenberg, Ronald
 Schooler, Carmi
 Schulman, Gary I.
 Schwartz, Mildred A.
 Schwartz, Pepper
 Schwartz, Richard
 Schwirian, Kent P.
 Scott, W. Richard
 Seeman, Melvin

Seiler, Lauren
 Shalin, Dimitri
 Shin, Eui-Hang
 Short, James F.
 Shover, Neal
 Siegel, Paul M.
 Simirenko, Alex
 Simon, William
 Simpson, Ida Harper
 Simpson, Richard L.
 Singer, Benjamin
 Singer, Burton
 Singer, Eleanor
 Skipper, James
 Skolnick, Arlene
 Skolnick, Jerome H.
 Skura, Barry
 S'y, David
 Smelser, Neil J.
 Smith, David
 Smith, Joel
 Smith, Kent
 Smucker, Joseph
 Snow, David
 Snyder, Charles R.
 Sofranko, Andrew
 Southwood, Kenneth
 Spitze, Glenna D.
 Stack, Steven
 Stark, Rodney W.
 Staefensmeier, Darrell
 Stein, Maurice R.
 Stewart, Robert L.
 Stewman, Shelby
 Styrker, Sheldon
 Sudman, Seymour
 Summers, Gene
 Suttles, Gerald
 Swafford, Michael
 Swanson, Guy E.
 Sweet, James A.
 Sykes, Gresham M.
 Tacer, Merlin
 Terry, Robert
 Tickameyer, Ann
 Tilly, Charles
 Tiryakian, Edward
 Tittle, Charles R.
 Trice, Harrison M.
 Tucker, Charles W.
 Tuma, Nancy
 Turk, Herman
 Turner, Ralph H.
 Tyree, Andrea
 Udy, Stanley H., Jr.
 Vigderhous, Gideon
 Vilmez, Wayne J.
 Voss, Harwin L.
 Wahrman, Ralph

Waite, Linda J.
Walton, John
Webster, Murray A., Jr.
Weigart, Andrew
Wellman, Barry
Westoff, Charles F.
Wheaton, Blair
Whetten, David
Wieting, Stephen
Wiggins, James A.

Wilensky, Harold L.
Willisnack, Richard
Williams, Robin M., Jr.
Wilson, Franklin D.
Wilson, Thomas P.
Wilson, William J.
Winsborough, Halliman H.
Wiseman, Jacqueline P.
Wolf, Wendy
Wood, James L.

Wood, James R.
Wright, Erik O.
Wright, James
Wuthnow, Robert
Yancey, William L.
Zimmer, Basil G.
Zimmerman, Don H.
Zucker, Lynne G.
Zuckerman, Harriet
Zurcher, Louis

INDEX

AMERICAN SOCIOLOGICAL REVIEW

Published Bimonthly by the American Sociological Association

CONTENTS OF VOLUME 44, NUMBERS 1-6

ARTICLES

Akers, Ronald L., Marvin D. Krohn, Lonn Lanza-Kaduce, and Marcia Radosevich Social Learning and Deviant Behavior: A Specific Test of a General Theory ..	635
Allison, Paul D. See J. Scott Long	816
Andrews, Kenneth H., and Denise B. Kandel Attitude and Behavior: A Specification of the Contingent Consistency Hypothesis	298
Antonio, Robert J. The Contradiction of Domination and Production in Bureaucracy: The Contribution of Organizational Efficiency to the Decline of the Roman Empire	895
Attewell, Paul, and Dean R. Gerstein Government Policy and Local Practice	311
Ballmer-Cao, Thanh-Huyen See Volker Bornschieer	487
Bean, Frank D., and Gray Swicegood Intergenerational Occupational Mobility and Fertility: A Reassessment	608
Black, Donald Comment: Common Sense in the Sociology of Law	18
Blalock, H. M. The Presidential Address: Measurement and Conceptualization Problems: The Major Obstacle to Integrating Theory and Research	881
Blyth, Dale A. See Roberta G. Simmons	948
Bollen, Kenneth A. Political Democracy and the Timing of Development	572
Bornschieer, Volker, and Thanh-Huyen Ballmer-Cao Income Inequality: A Cross-National Study of the Relationships between MNC-Penetration, Dimensions of the Power Structure and Income Distribution	487
Burstein, Paul Equal Employment Opportunity Legislation and the Income of Women and Nonwhites	367
Bush, Diane Mitsch See Roberta G. Simmons	948
Carter, Donna K. See Stanley Lieberman	347
Clignet, Remi The Variability of Paradigms in the Production of Culture: A Comparison of the Arts and Sciences.	392
Cohen, Lawrence E., and Marcus Felson Social Change and Crime Rate Trends: A Routine Activities Approach	588
Collver, Andrew, and Moshe Semyonov Suburban Change and Persistence	480
Eckberg, Douglas Lee, and Lester Hill, Jr. The Paradigm Concept and Sociology: A Critical Review	925
Felson, Marcus See Lawrence E. Cohen	588
Fine, Gary Alan Small Groups and Culture Creation: The Idioculture of Little League Baseball Teams	733
Firebaugh, Glenn Structural Determinants of Urbanization in Asia and Latin America, 1950-1970	199
Fligstein, Neil D. See Wendy C. Wolf	235
Freedman, Deborah S. See Arland Thornton	832
Frey, William H. Central City White Flight: Racial and Nonracial Causes	425
Galle, Omer R. See Walter R. Gove	59
Gerstein, Dean R. See Paul Attewell	311
Gortmaker, Steven L. Poverty and Infant Mortality in the United States	280
Gottfredson, Michael R., and Michael J. Hindelang A Study of <i>The Behavior of Law</i>	3
Gottfredson, Michael R., and Michael J. Hindelang Response: Theory and Research in the Sociology of Law	27
Gove, Walter, and Michael Hughes Possible Causes of the Apparent Sex Differences in Physical Health: An Empirical Investigation	126
Gove, Walter, R., Michael Hughes, and Omer R. Galle Overcrowding in the Home: An Empirical Investigation of Its Possible Consequences	59
Hill, Lester, Jr. See Douglas Lee Eckberg	925

Hindelang, Michael J. See Michael R. Gottfredson	3
Hindelang, Michael J. See Michael R. Gottfredson	27
Hindelang, Michael J., Travis Hirschi, and Joseph G. Wels Correlates of Delinquency: The Illusion of Discrepancy between Self-Report and Official Measures	995
Hirschi, Travis See Michael J. Hindelang	995
Hodge, Robert W. See Andrea Tyree	410
Hofferth, Sandra L., and Kristin A. Moore Early Childbearing and Later Economic Well-Being	784
Hughes, Michael See Walter R. Gove	59
Hughes, Michael See Walter Gove	126
Ihinger-Tallman, Marilyn See Irving Tallman	216
Jacobs, David Inequality and Police Strength: Conflict Theory and Coercive Control in Metropolitan Areas	913
Kandel, Denise B. See Kenneth H. Andrews	298
Kelley, Jonathan See Robert V. Robinson	38
Krohn, Marvin D. See Ronald L. Akers	635
Lanza-Kaduce, Lonn See Ronald L. Akers	635
Laumann, Edward O., and Peter V. Marsden The Analysis of Oppositional Structures in Political Elites: Identifying Collective Actors	713
Lengermann, Patricia Madoo The Founding of the <i>American Sociological Review</i> : The Anatomy of a Rebellion	185
Lieberman, Stanley, and Donna K. Carter Making It in America: Differences between Eminent Blacks and White Ethnic Groups	347
Long, J. Scott, Paul D. Allison, and Robert McGinnis Entrance into the Academic Career	816
McGinnis, Robert See J. Scott Long	816
McPhail, Clark, and Cynthia Rexroat Mead vs. Blumer: The Divergent Methodological Perspectives of Social Behaviorism and Symbolic Interactionism	449
Marsden, Peter V. See Edward O. Laumann	713
Marshall, Harvey White Movement to the Suburbs: A Comparison of Explanations	975
Moore, Gwen The Structure of a National Elite Network	673
Moore, Kristin A. See Sandra L. Hofferth	784
Newport, Frank The Religious Switcher in the United States	528
Nolan, Patrick D. Size and Administrative Intensity in Nations	110
Parcel, Toby L. Race, Regional Labor Markets and Earnings	262
Presser, Stanley See Howard Schuman	692
Quadagno, Jill S. Paradigms in Evolutionary Theory: The Sociobiological Model of Natural Selection	100
Radosevich, Marcia See Ronald L. Akers	635
Ragin, Charles C. Ethnic Political Mobilization: The Welsh Case	619
Rexroat, Cynthia See Clark McPhail	449
Robinson, Robert V., and Jonathan Kelley Class As Conceived by Marx and Dahren- dorf: Effects on Income Inequality, Class Consciousness, and Class Conflict in the United States and Great Britain	38
Rothschild-Whitt, Joyce The Collectivist Organization: An Alternative to Rational Bureaucratic Models	509
Schuman, Howard, and Stanley Presser The Open and Closed Question	692
Seldler, John Priest Resignations in a Lazy Monopoly	763
Semyonov, Moshe See Andrew Collver	480
Semyonov, Moshe See Andrea Tyree	410
Simmons, Roberta G., Dale A. Blyth, Edward F. Van Cleave, and Diane Mitsch Bush Entry into Early Adolescence: The Impact of School Structure, Puberty, and Early Dating on Self-Esteem	948
Smith, Richard A. Decision Making and Non-Decision Making in Cities: Some Impli- cations for Community Structural Research	147
Spaeth, Joe L. Vertical Differentiation among Occupations	746
Spenner, Kenneth I. Temporal Changes in Work Content	968
Stahura, John M. Suburban Status Evolution/Persistence: A Structural Model	937
Swicegood, Gray See Frank D. Bean	608
Tallman, Irving, and Marilyn Ihinger-Tallman Values, Distributive Justice and Social Change	216

INDEX

1029

Taylor, Patricia A. Income Inequality in the Federal Civilian Government	468
Tyree, Andrea, Moshe Semyonov, and Robert W. Hodge Gaps and Glissandos: Inequality, Economic Development and Social Mobility in 24 Countries	410
Useem, Michael The Social Organization of the American Business Elite and Participation of Corporation Directors in the Governance of American Institutions	553
Van Cleave, Edward F. See Roberta G. Simmons	948
Weis, Joseph G. See Michael J. Hindelang	995
Wolf, Wendy C., and Neil D. Fligstein Sex and Authority in the Workplace: The Causes of Sexual Inequality	235
Whitt, J. Allen Toward a Class-Dialectical Model of Power: An Empirical Assessment of Three Competing Models of Political Power	81

RESEARCH NOTES

Ericksen, Eugene P. See William L. Yancey	253
Greenberg, David F., Ronald C. Kessler, and Charles H. Logan A Panel Model of Crime Rates and Arrest Rates	843
Harrison, Michael See Bernard Lazerwitz	656
Kessler, Ronald C. See David F. Greenberg	843
Lazerwitz, Bernard, and Michael Harrison American Jewish Denominations: A Social and Religious Profile	656
Logan, Charles H. See David F. Greenberg	843
Massey, Douglas S. Effects of Socioeconomic Factors on the Residential Segregation of Blacks and Spanish Americans in United States Urbanized Areas	1015
O'Brien, Robert M. The Use of Pearson's r with Ordinal Data	851
Thornton, Arland, and Deborah S. Freedman Changes in the Sex Role Attitudes of Women, 1962-1977: Evidence from a Panel Study	832
Yancey, William L., and Eugene P. Ericksen The Antecedents of Community: The Economic and Institutional Structure of Urban Neighborhoods	253

COMMENTS AND REPLIES

Alexander, Jeffrey C. Once Again: The Case for Parsons's Voluntarism; Reply to Heeren	175
Allison, Paul D. Reply to Jasso	870
Appelbaum, Richard P. Reply to Goldfrank	174
Bell, Wendell See Robert V. Robinson	334
Bonacich, Edna Still Another Look at Black/White Unemployment: Reply to Oehler	342
Bonjean, Charles M., Michael D. Grimes, Robert L. Lineberry, and J. Larry Lyon Reply to Lincoln and Olson, ASR February, 1978 The "Ecological Approach" and Community Leadership	181
Carroll, Michael P. Rejoinder to Landsman	166
Franke, Richard Herbert The Hawthorne Experiments: Re-View	861
Goldfrank, Walter R. Comment on Appelbaum, ASR February, 1978 Dialectical Analysis and Closed Systems: Class Societies or World-Economy?	172
Grimes, Michael See Charles M. Bonjean	181
Hanada, Mitsuyo See James R. Lincoln	668
Heeren, John W. Comment on Alexander, ASR June, 1975 Parsons's Voluntarism	174
Hewitt, Christopher Reply to Stack	171
Jasso, Guillermina Comment on Allison, ASR December, 1978 On Gini's Mean Difference and Gini's Index of Concentration	867
Katz, Fred E. Comment on Lincoln, Olson and Hanada, ASR December, 1978 Organizational Theory and Cultural Intrusions into Organizations	667
Kerckhoff, Alan C., and Robert Nash Parker Comment on Robinson and Bell, ASR April 1978 "Equality, Success, and Social Justice in England and the United States": A Commentary and Critique	328
Landsman, Gail Comment on Carroll, ASR June, 1975 The Ghost Dance and the Policy of Land Allotment	162
Lincoln, James R., Jon Olson, and Mitsuyo Hanada Reply to Katz	668
Lineberry, Robert L. See Charles M. Bonjean	181
Long, Larry H. Reply to Norton	178
Lyon, J. Larry See Charles M. Bonjean	181
Norton, Christopher B. Comment on Long, ASR February, 1974: 1970 Census Figures on Public Assistance Income: Some Comparative Figures from Alternate Sources	177

Oehler, Kay Comment on Bonacich, ASR February, 1976 Another Look at the Black/White Trend in Unemployment Rates	339
Olson, Jon See James R. Lincoln	668
Parker, Robert Nash See Alan C. Kerckhoff	328
Presser, Stanley See Howard Schuman	692
Robinson, Robert V., and Wendell Bell Confusion and Error in Kerckhoff and Parker: A Reply	334
Silberman, Matthew Deterrence and Social Control: A Reply to Grasmick and McLaughlin ASR April, 1978	872
Smith, Douglas See Charles R. Tittle	669
Stack, Steven Comment on Hewitt, ASR June, 1977 The Effects of Political Participation and Socialist Party Strength on the Degree of Income Inequality	168
Stark, Rodney Comment on Tittle, Villemez, and Smith, ASR October, 1978 Whose Status Counts?	668
Tittle, Charles R., Wayne Villemez, and Douglas Smith Reply to Stark	669
Villemez, Wayne See Charles R. Tittle	669
Wardwell, Walter I. Comment on Franke and Kaul, ASR October, 1978 Critique of a Recent Professional "Put-Down"	858